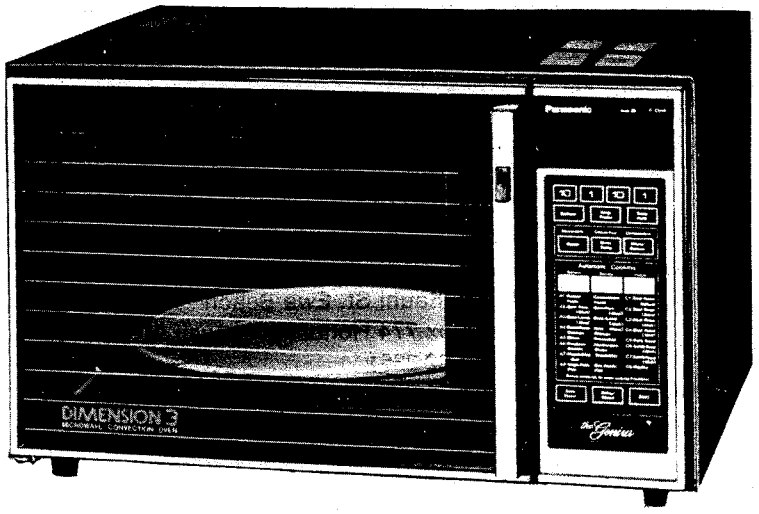
ORDER NO. MOD81110125C1

Service Manual

Microwave Oven

NE-9930, NE-9930C



NE-9930 for U.S.A.
NE-9930C for Canada
Specifications

Power Source :	115 V AC Single Phase 60 Hz
Power Requirement :	1.42 kw : (13.0 A) : Microwave 1.55 kw : (13.8 A) : Conv/Comb (for NE-9930) 1.42 kw : (13.0 A) : Conv/Comb (for NE-9930C)
Output:	700 watts : Full microwave power 1.3 kw : Heater (1.2 kw for NE-9930C)
Oscillation Frequency :	2,450 MHz
Magnetron :	2M157-M2
Timer :	99 min. 99 sec. / 9 Hr. 99 min.
Outside Dimensions :	24-3/4" (W) x 22" (D)x 15-1/8" (H) 630 mm (W) x 560 mm (D) x 385 mm (H)
Oven cavity dimensions :	15-1/2" (W) x 15-1/2" (D) x 9-1/2" (H) 395 mm (W) x 395 mm (D) x 241 mm (H)
Weight :	86 lbs (39 kg)
Specifications subject to change without notice.	

Panasonic®

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of Puerto Rico, Inc.
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Victoria Industrial Park
Carolina, Puerto Rico 0

WARNING

1. This product should be serviced only by trained qualified personnel.
2. Though this product has been manufactured in compliance with :
   "Federal Performance Standard 21 CFR Subchapter J" (D.H.H.S.): NE-9930
   or "Radiation Emitting Devices Act" (NHW) : NE-9930C
   it is very important when servicing to avoid being exposed to excessive microwave radiation. This may be hazardous. All repairs should be made in accordance with procedures described in this manual.
3. Check for radiation leakage after every servicing according to the "procedure for measuring radiation leakage" on page 37.
4. Any serviceman who learns of any accident pertaining to microwave radiation leakage should immediately notify the appropriate address listed below.

IN U.S.A. (MECA)	PANASONIC COMPANY Division of Matsushita Electric Corporation of America One Panasonic Way, Secaucus, New Jersey 07094 Attention : Quality Assurance Dept. (201) 348-7000
IN HAWAII (PHI)	PANASONIC HAWAII, INC. 91-238 Kauhi St. Ewa Beach P.O. Box 774 Honolulu, Hawaii 96808-0774 (808) 682-2851
IN PUERTO RICO (PSC)	PANASONIC SALES COMPANY, Division of Matsushita Electric of Puerto Rico, Inc. Ave. 65 De Infanteria, KM 9.7 Victoria Industrial Park Carolina, Puerto Rico 00630 (809) 769-4320
IN CANADA (MELCA)	PANASONIC CANADA Division of Matsushita Electric of Canada Limited 5770 Ambler Drive, Mississauga, Ontario, L4W 2T3 (416) 624-5010

5. There are special components used in the microwave oven which are important for safety. These parts are shaded on the schematic diagram and marked with a ⚠ on the replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent microwave leakage, shock, fire, or other hazards. Do not modify the original design.

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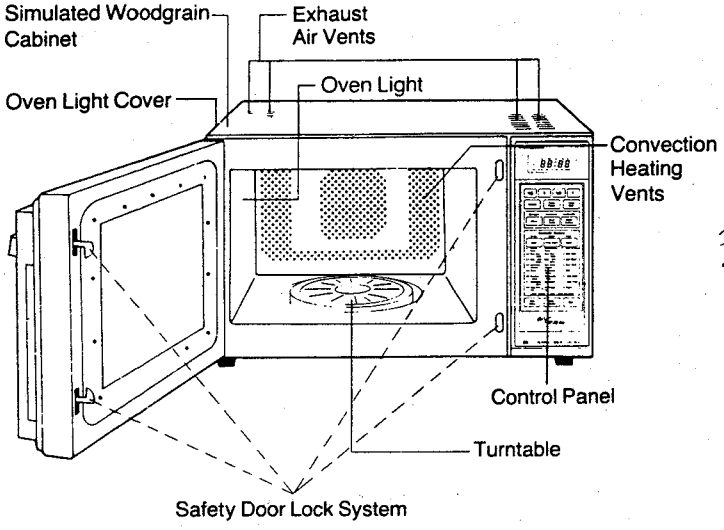
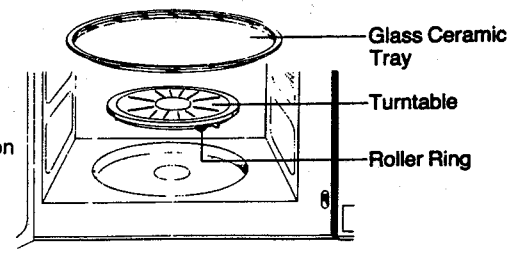
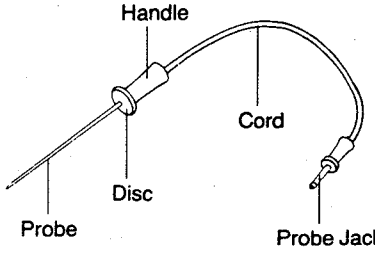
OPERATING INSTRUCTIONS

Feature Diagram

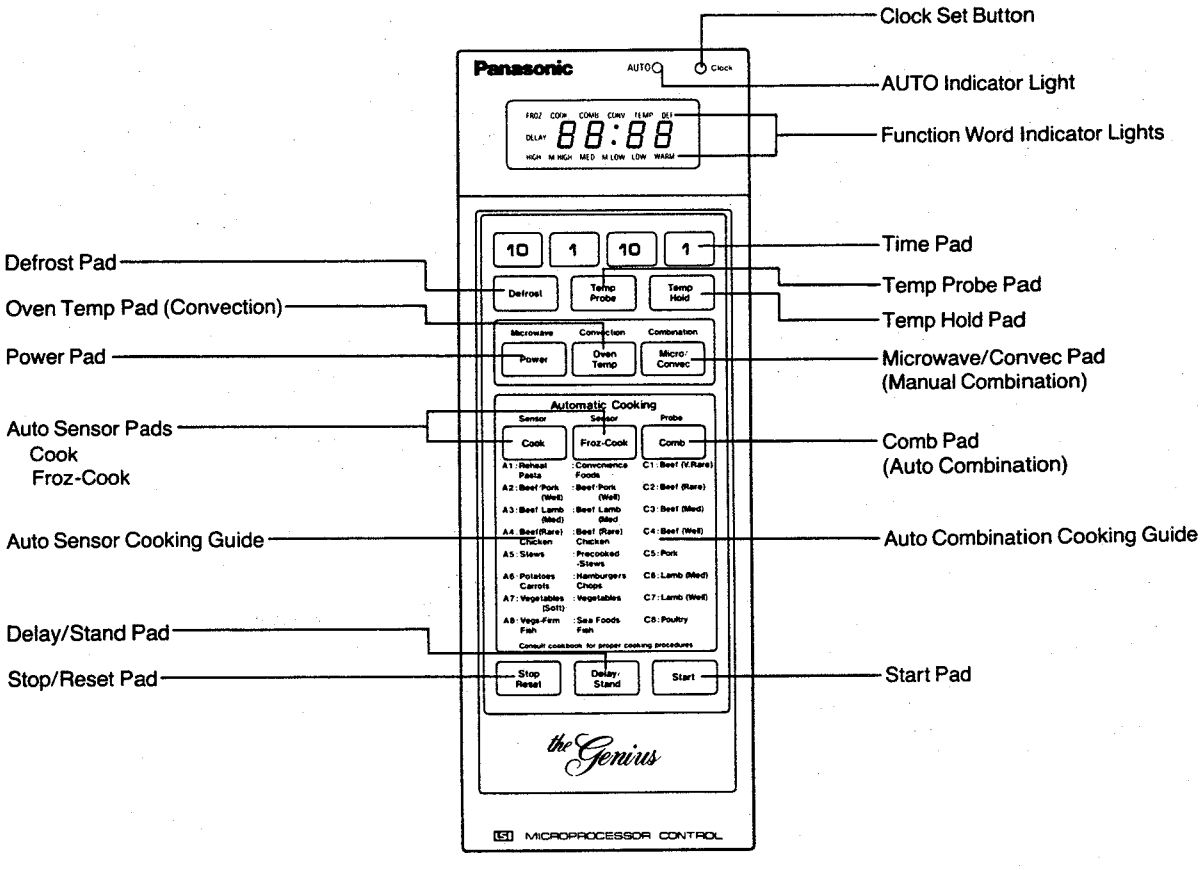




TEMPERATURE PROBE

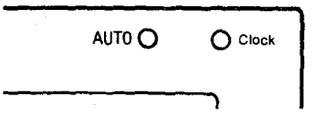


Control Panel



Controls

Auto Count Up:
The Time, Temp Probe, Temp Hold, Microwave Power, Oven Temp, Micro/Convec, Auto Sensor Cook, Auto Sensor Froz-Cook, and Auto Comb Pads are all equipped with the Auto Count Up feature. By holding your finger on the pad, the readout in the display window will automatically count up through the complete function. After reaching the maximum function, the display will return to the starting point and continue to count up. To stop the readout at a specific setting, simply remove your finger from the pad.
Note: When programming the oven, hold your finger firmly in the center of the pad.



To set Clock:
When the oven is first plugged in, the entire display will light up. Four zeros (00:00) will appear in display window and the colons will blink.

Step 1. Enter time of day by using appropriate Time Pads.
Example: To set 11:25 (a.m. or p.m.), touch Time Pads as follows:

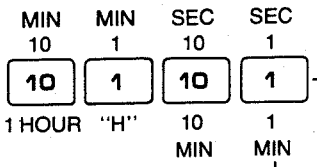
From Left:
10 → once
1 → once

To Right:
10 → twice
1 → five times

—Time appears in display window; colon is blinking.

Step 2. Push Clock Set Button.
—Colon stops blinking; time of day is entered and locked into display. All indicator lights turn off.

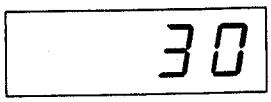
Note: 1) Clock must be set before oven will operate.
2) To reset time of day, push Clock Set Button to clear the time. Colon will begin to blink. Enter the correct time of day by following above procedure.
3) The clock will keep the time of day as long as unit is plugged in and electricity is supplied.



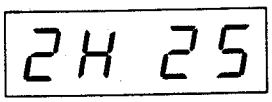
Time Select Pads:

1) Used for MICROWAVE (Except LOW Power):
The Pads serve as a 10 minute pad, 1 minute pad, 10 second pad and 1 second pad from the left.
(Example 1: To set 13 minutes 45 seconds)
Touch;
10 MIN Pad: once
1 MIN Pad: 3 times
10 SEC Pad: 4 times
1 SEC Pad: 5 times

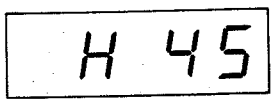
(Example 2: To set 30 seconds)
Touch;
10 SEC Pad: 3 times



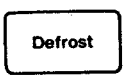
2) Used for CONVECTION, COMBINATION, DELAY/STAND and LOW Power:
The Pads serve as a 1 hour pad, an inoperable pad, 10 minute pad and 1 minute pad from the left.
(Example 1: To set 2 hours 25 minutes)
Touch;
1 HOUR Pad: twice
10 MIN Pad: twice
1 MIN Pad: 5 times



(Example 2: To set 45 minutes)
Touch;
10 MIN Pad: 4 times
1 MIN Pad: 5 times



Note: When Convection, Combination, Delay/Stand or LOW power is selected, the seconds will not visibly count down in the display window until only 59 minutes remain. The timer will then display minutes and seconds, and seconds will visibly count down.



Defrost Pad (Microwave):
When Defrost is selected, the defrosting time is divided into 8 periods, which alternates between defrost and stand. When oven is operating at Defrost power the Defrost indicator light blinks. The light remains on, but does not blink during stand time.

Temp Probe Pad:
Automatically counts-up in 10°F. increments from 100°F. to 200°F. Touching the Temp Probe Pad during cooking shows the programmed temperature in the display window.

Temp Hold Pad:
Keeps food at serving temperature after temperature probe cooking. Food is kept warm by microwave energy. Carefully choose cooking utensils for this cooking method, especially when it is programmed with convection cooking.
The Temp Hold Pad automatically counts-up in 10 minute increments from 10 minutes to 90 minutes (1 hour 30 minutes).

Power

Power Pad (Microwave):
Automatically counts-up from HIGH to WARM. The following is the approximate wattage for each power level.

HIGH power	(approx. 700 watts/Full power)
M. HIGH power	(approx. 650 watts/90% power)
MEDIUM power	(approx. 490 watts/70% power)
M. LOW power	(approx. 360 watts/50% power)
LOW power	(approx. 200 watts/30% power)
WARM power	(approx. 70 watts/10% power)

Oven Temp

Oven Temp Pad (Convection):
Automatically counts-up in 25°F. increments from 200°F. to 450°F. Touching Oven Temp Pad during cooking shows the temperature you programmed in display window.

Micro/ Convec

Micro/Convec Pad (Combination):
Automatically counts-up for the desired combination setting. Program 1 is for Beef, Pork and Lamb. Program 2 is for Chicken, Duck and Turkey.

Cook Froz-Cook

Auto Sensor Control Pads (Microwave):
Automatically counts-up from A1 to A8.
COOK cycles are used for cooking foods from their natural storage places. (i.e. meats are refrigerated cold, cake mixes are room temperature, etc.)
FROZ-COOK cycles are used for cooking food that are thoroughly frozen. (i.e. frozen meats, casseroles and convenience foods.)

Comb

Auto Combination Pad (Combination):
Automatically counts-up from C1 to C8. Auto Combination Pad must be used with the temperature probe and is used for roasting meats and poultry.
Note: Touching the Comb Pad during cooking will show the final preprogrammed food temperature. The Temp Probe Pad may also be used for the same purpose.

Stop Reset

Stop/Reset Pad:
Before Cooking: One tap clears your instructions.
During Cooking: One tap temporarily stops the cooking process.
Another tap cancels all your instructions and time of day appears in display window.

Delay/ Stand

Delay/Stand:
To delay cooking or to program Stand Time after cooking is completed or as an auxiliary timer.

Start

Start Pad:
One tap allows oven to begin functioning. If door is opened or Stop/Reset Pad is tapped once during oven operation, the Start Pad must again be touched to restart the oven.

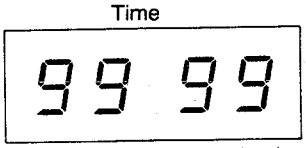
Auto Preheat (Convention):
Automatically preheats the oven to the desired convention oven temperature. Set oven temperature and touch the Start Pad. "P" appears in display window. When oven is preheated, three beeps will sound and "P" will begin to blink in display window.

Opening Door:
Opening the door during cooking will stop the cooking process without canceling the program. Cooking resumes as soon as the door is closed and Start Pad is touched. The oven light will stay on or turn on whenever the door is opened.

Beep Sound:
When a pad is touched correctly, a beep sound is heard. If a pad is touched and no beep sound is heard, the unit has not or cannot accept the instruction. Two beeps will sound between programmed stages. Three beeps will sound after Auto Preheat and Cooling for Auto Sensor Cooking. At the end of any complete program, five beeps will sound.

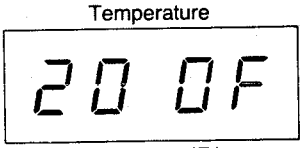
Digital Readout Display:

Time



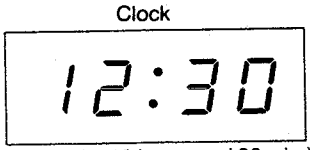
(Example: 99 min. 99 sec.)

Temperature



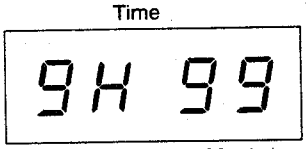
(Example: 200°F.)

Clock



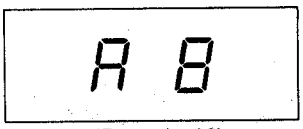
(Example: 12 hours and 30 min.)

Time



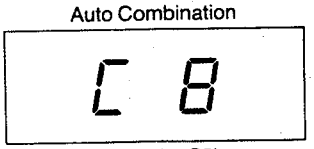
(Example: 9 hours 99 min.)

Auto Sensor



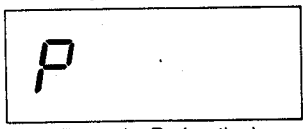
(Example: A8)

Auto Combination



(Example: C8)

Convection

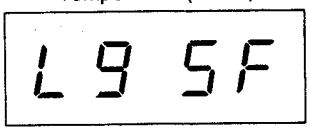


(Example: Preheating)

Auto Sensor

(Example: HOT sign)

Temperature (Probe)

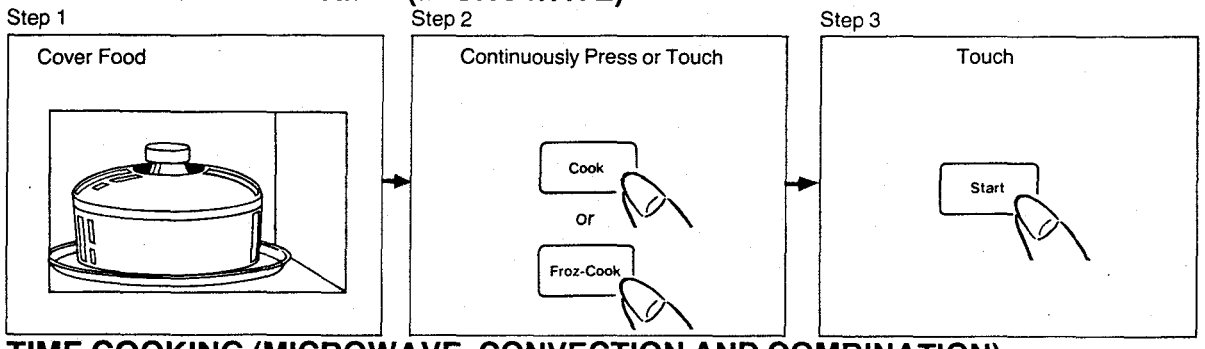


(Example: Lower than 100 °F)

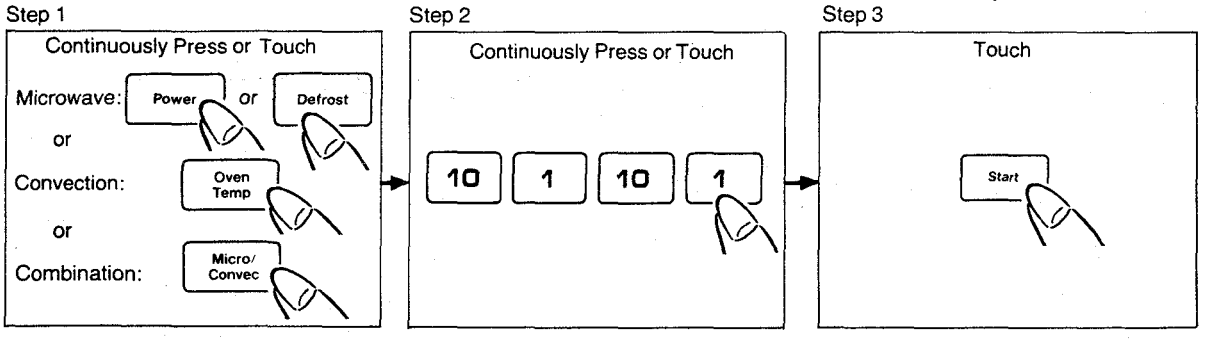
Operation Procedure

Basic Operation of Your Oven

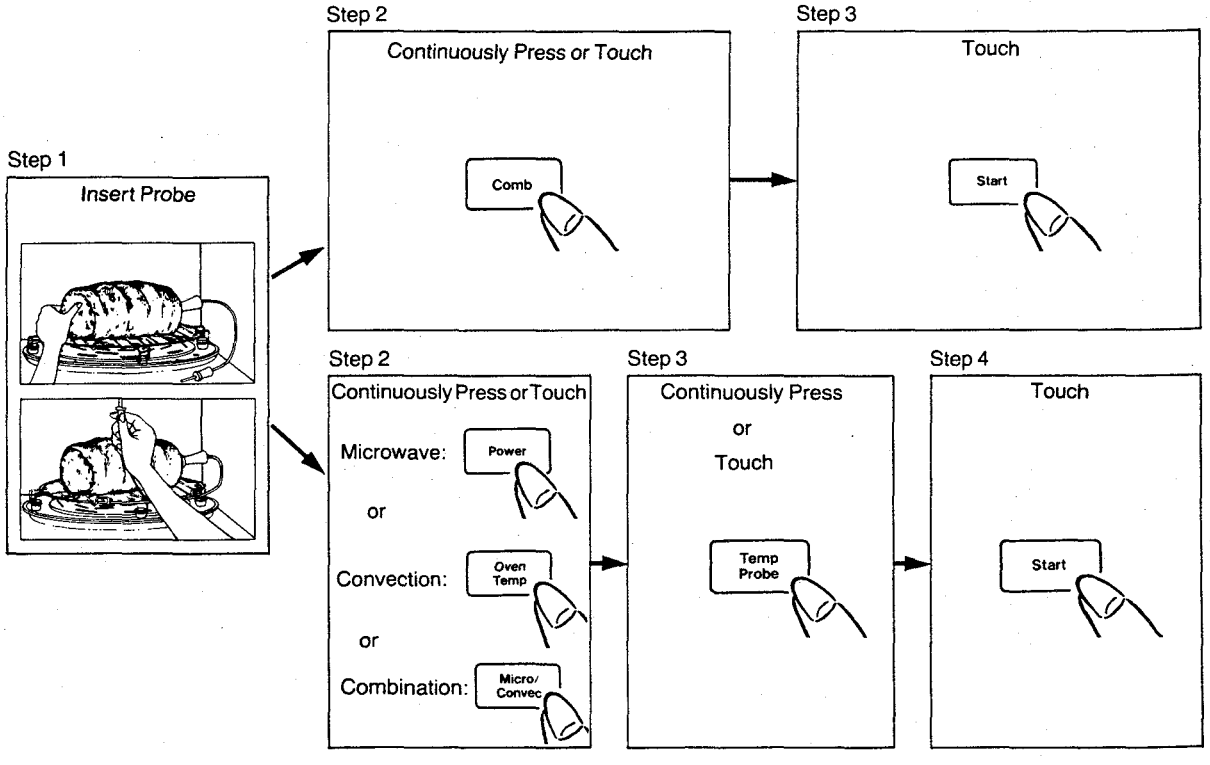
AUTO SENSOR COOKING (MICROWAVE)



TIME COOKING (MICROWAVE, CONVECTION AND COMBINATION)



TEMPERATURE PROBE COOKING (AUTO COMBINATION, MICROWAVE, CONVECTION AND COMBINATION)



Microwave

Microwave cooking lets you defrost foods quickly, prepare delicious stews, savory casseroles, and vegetables that come out tender and colorful. It's also an ideal and easy way to reheat leftovers that taste as though they were freshly prepared.

Note: 1) See cooking utensils section in your Panasonic Microwave Cookbook or page 28 of this manual.
2) Do not use recycled paper products in the oven. They may contain impurities which could cause the paper to create sparking (arcing), and this could result in a fire during oven operation.
3) Do not operate oven empty. The microwave energy will reflect continuously throughout the oven if no food or water is present to absorb the energy.

Auto Sensor Cooking

For proper cooking results on Auto Sensor Cycles, be sure to cover foods securely with plastic wrap such as Saran Wrap (by Dow Chemical Co.,) or place foods in a glass casserole with a proper fitting lid. For further information refer to the Introduction in the Cookbook and Auto Sensor recipes.

Cook or Froz-Cook

Step 1. Select the appropriate Auto Sensor Control Pad: Cook or Froz-Cook and tap or press it continuously until the desired Auto Cycle number appears in the display window.

1 tap:	A1	5 taps:	A5
2 taps:	A2	6 taps:	A6
3 taps:	A3	7 taps:	A7
4 taps:	A4	8 taps:	A8

—Clock time disappears. The selected Auto Sensor Cycle number appears in display window. The Auto Sensor Status indicator lights also appear in display window. The AUTO indicator light turns on.

Start

Step 2. Touch Start Pad.
—Microwave activity starts. The Auto status indicator light for the first operating stage starts to blink and other Auto status indicator light remains on. The turntable rotates. Oven light turns on.
—Oven will operate automatically according to the selected Auto Sensor Cycle.

Cook Cycle:

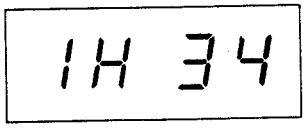
—When Auto Sensor Cycle (A2 through A8) disappears from display window, two beeps sound. The remaining cooking time appears in display window in minutes and seconds and begins to count down. COOK status indicator light continues to blink while AUTO indicator light remains on.
Note: On Cook A1 no time appear in display window. COOK status indicator light stops blinking, AUTO indicator light turns off and oven beeps 5 times. The cooking cycle is complete.
—When Auto Sensor Cook cycle is completed, the oven beeps 5 times and shuts off automatically. Indicator and oven lights turn off. The turntable stops rotating. The time of day reappears in display window.

Froz-Cook Cycle:

—When Auto Sensor Cycle (A1 through A8) disappears from display window, two beeps sound. The remaining cooking time appears in display window in minutes and seconds and begins to count down. The FROZ status indicator light turns off while the COOK status indicator light begins to blink. AUTO indicator lights remain on.
—When Auto Sensor Froz-Cook Cycle is completed, indicator and oven lights turn off, the oven beeps 5 times and shuts off automatically. The turntable stops rotating. The time of day reappears in display window.

Note: 1) If Auto Sensor Cooking is programmed a short time after Convection or Combination Cooking, "HOT" will appear in display window. The HOT sign indicates that the oven cavity is too hot for the proper operation of the Auto Sensor Function. While the HOT sign is in display window, the unit cannot be operated by Auto Sensor, and room temperature air is circulated in the oven cavity to cool it. You may leave the door ajar to cool the unit. After the unit is cooled, the oven beeps 3 times and time of day appears in display window. Auto Sensor cycles can now be programmed.

2) When the oven calculates the balance of the cooking time to be over 60 minutes, the time will appear as hours and minutes.
Example: If the cooking time is 94 minutes, the display window will show 1H34. The seconds will not visibly count down in display window until 59 minutes remain.
The time in display window will then show in minutes and seconds, and visibly count down.



3) Only microwave power and time cooking can be programmed after Auto Sensor Cooking. The unit will not accept any other function.
Example: Auto Sensor FROZ-COOK—WARM/20 minutes.

IMPORTANT:

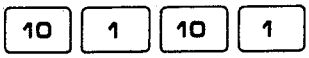
1. Auto Sensor Cooking is successful with the foods and recipes found in the Genius Cookbook and marked with the Symbol A. Because of the vast differences in food composition, recipes and charts without the Auto Sensor Symbol should be prepared in your microwave oven using the Power Select and Time features.
2. When cooking by Auto Sensor, the oven door should not be opened for longer than 1 minute while A1–A8 is in display window. Opening the door for longer than 1 minute may cause inaccurated cooking results. Once time appears in display window, the door may be opened and foods can be stirred or turned.
3. All food for Auto-Sensor Cooking on Cook Cycle is taken from the place you normally store them.
4. All foods for Auto Sensor Cooking on Froz-Cook Cycle should be solidly frozen.
5. Before using Auto Sensor feature, make sure glass ceramic tray in the oven is dry to assure best Auto Cooking results.
6. Room temperature of heat surrounding the oven should not be above 95°F. when using Auto Sensor Cooking feature. Results may not be satisfactory.
7. Foods less than 3 or 4 ounces should be cooked by power and time, not by Auto Sensor Cooking Cycle.
8. When selecting Auto Sensor Froz-Cook Cycle for frozen food, do not expect foods to be completely defrosted after the Frozen Cycle. This is a total cycle and foods should not be removed until the end of the cook cycle. For defrosting foods only use Defrost Pad and Time.

Time Cooking

If Convection or Combination was used prior to Microwave Cooking or Defrosting, allow unit to cool 15 to 20 minutes with the door slightly ajar. This will insure best cooking or defrosting results.

Cyclic Defrost

Step 1. Touch Defrost Pad.
—Clock time disappears. DEF indicator light turns on.

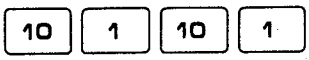


Step 2. Set defrost time by pressing continuously or tapping Time Pads.
—Defrost time appears in display window in minutes and seconds.

Step 3. Touch Start Pad.
—Oven light turns on; microwave defrosting begins.
DEF indicator light begins to alternately blink and glow.
Turntable begins to rotate.
Defrosting time counts down second by second.
—When defrosting is completed, oven beeps five times and shuts off automatically. Turntable stops.
DEF indicator light and oven light turn off.
Time of day appears in display window.

One Stage Cooking

Step 1. Select cooking power by pressing continuously or tapping Power Pad.
—Clock time disappears. Selected power indicator light turns on.



Step 2. Set cooking time by pressing continuously or tapping Time Pads.
—Cooking time appears in display window in minutes and seconds.
Note: When LOW power is selected "H" meaning Hour appears in display window and cooking time is shown in hours and minutes.

[**Step 3. Touch Start Pad.**]

——— OR ———

Two Stage Cooking

Step 3. Before touching Start Pad, select second cooking power by pressing continuously or tapping Power Pad.
—Previously selected time and power indicator light disappear from display window. Second stage power indicator light turns on.

Step 4. Set second stage cooking time by pressing continuously or tapping Time Pads.
—Second stage cooking time appears in display window.

[**Step 5. Touch Start Pad.**]

Note: Some examples of 2 stage cooking are:
*HIGH—M. LOW
*DEFROST—HIGH
*DELAY—MEDIUM
*M. HIGH—STAND

——— OR ———

Three Stage Cooking

Power

Step 5. Before touching Start Pad, select third stage cooking power by pressing continuously or tapping Power Pad.
—Previously selected time and power indicator light disappear from display window. Third stage power indicator light turns on.

10 1 10 1

Step 6. Set third stage cooking time by pressing continuously or tapping Time Pads.
—Third stage cooking time appears in display window.

Start

Step 7. Touch Start Pad.
—Microwave activity starts. Oven light turns on and turntable rotates. Third stage cooking time disappears and first stage cooking time reappears in display window and begins to count down.
First stage power indicator light turns on and starts to blink while second and third stage indicator lights turn and stay on. Oven light turns on and turntable rotates.
Note: When LOW power is selected, cooking time counts down minute by minute. Cooking time counts down second by second when less than 59 minutes remain.
—When first stage cooking ends, oven beeps twice. Second stage cooking time reappears in display window and begins to count down. First stage power indicator light turns off while second stage power indicator light begins to blink. Third stage power indicator light remains on.
—When second stage cooking ends, oven again beeps twice. Third stage cooking time reappears in display window and begins to count down. Second stage power indicator light turns off while third stage power indicator light begins to blink.
—When third stage cooking ends, oven beeps five times and shuts off automatically. Turntable stops. Indicator light and oven light turn off. Time of day appears in display window.
Note: Some examples of 3 stage cooking are:
*HIGH—MEDIUM—LOW *DEFROST—HIGH—STAND
*DEFROST—M. LOW—WARM *DELAY—M. HIGH—STAND

Temperature Probe Cooking

One Stage Cooking

Step 1. Insert temperature probe horizontally into center of food and place in oven. Connect probe jack to oven ceiling receptacle.
—TEMP indicator light turns on.

Power

Step 2. Select cooking power by pressing continuously or tapping Power Pad.
—Clock time disappears. Selected power indicator light turns on.

Temp Probe

Step 3. Select temperature of food by pressing continuously or tapping Temp Probe Pad.
—Selected temperature appears in display window.

[Step 4. Touch Start Pad.]

——— OR ———

Two Stage Cooking

Power

Step 4. Before touching Start Pad, select second cooking power by pressing continuously or tapping Power Pad.
—Previously selected power indicator light and temperature disappear from display window. Second stage power indicator light turns on.

Temp Probe

Step 5. Select second stage temperature of food by pressing continuously or tapping Temp Probe Pad.
—Selected temperature appears in display window.

[Step 6. Touch Start Pad.]

Note: Some examples of 2 stage cooking are:
*HIGH—LOW
*MEDIUM—TEMP HOLD
*DELAY—HIGH
*MEDIUM—STAND

——— OR ———

Three Stage Cooking

Power

Step 6. Before touching Start Pad, select third stage cooking power by pressing continuously or tapping Power Pad.
—Previously selected power indicator light and temperature disappear from display window. Third stage power indicator light turns on.

Temp Probe

Step 7. Select third stage temperature of food by pressing continuously or tapping Temp Probe Pad.
—Selected temperature appears in display window.

Start

Step 8. Touch Start Pad.
—Oven light turns on. Microwave cooking begins.
Turntable begins to rotate.
First stage power indicator light begins to blink.
Second and third stage power indicator lights stay on. Current temperature of food is displayed in rising 5°F. increments starting at 100°F.. If starting temperature is lower than 100°F., "L95F" (meaning lower than 100°F.) will be displayed until food reaches 100°F..
—When first stage cooking ends, oven beeps twice; first stage power indicator light turns off while second stage light begins to blink. Current temperature continues to be displayed.
—When second stage cooking ends, oven again beeps twice; second stage power indicator light turns off while third stage light begins to blink. Current temperature continues to be displayed.
—When third stage cooking ends, oven beeps five times and shuts off automatically; power indicator light and oven light turn off. Turntable stops. Time of day appears in display window.

Note: 1) In case a lower temperature than first stage is set for second stage (Example: 160°F for first stage and 140°F for second stage), microwave activity automatically stops when first stage temperature (160°F) is reached. Temperature of food drops to second stage temperature (140°F) by natural cooling while second stage power indicator light stays on.
2) In case a lower temperature than second stage is set for third stage, oven works as in example given above.
3) Touching Temp Probe Pad during cooking shows the final food temperature you programmed in display window.

Step 9. Remove temperature probe from oven ceiling receptacle.
—Temp Probe indicator light turns off.

Note: Some examples of 3 stage cooking are:
*HIGH—MEDIUM—LOW
*HIGH—M. LOW—TEMP HOLD
*DELAY—HIGH—MEDIUM
*DELAY—M. LOW—STAND

IMPORTANT:

1) Do not allow temperature probe tip to touch surface of oven wall.
   Damage to probe and/or oven may result.
2) Do not allow probe to come in contact with metal racks or metal Spatter Shield.
   Arcing may occur and damage to the oven, probe, racks or Spatter Shield may result.
3) To program oven for temperature probe cooking, probe must be connected to oven ceiling receptacle.
4) Probe should be inserted at least one inch into center of food to insure accurate temperature reading. If probe is not inserted securely into the food, it may fall out and arcing (bluish sparks) may result.
   For information on how to properly insert temperature probe see Introduction Section of the Microwave Cookbook.
5) Remove probe from oven after cooking. Do not store probe inside oven cavity. Should oven be turned on accidentally, damage to probe and/or oven may result.
6) Do not use your temperature probe in other manufacturer's ovens, including other Panasonic ovens. Also do not use any other manufacturers' probes or other Panasonic probes in your Microwave/Convection oven.
7) Do not attempt to insert probe into solidly frozen foods. Damage to probe may result.
8) Do not hit or drop probe. Damage may occur causing incorrect temperature readings and inaccurate cooking results.
9) Use pot holders when removing probe from oven ceiling receptacle. Microwave, Convection or Combination cooking causes probe to become very hot to the touch.
10) Connection or removal of temperature probe during any cooking program or during a temporary stop in the middle of cooking will cancel remaining program. Time of day will appear in display window.

Convection

You'll find a convection oven in most bakeries, restaurants and other institutional kitchens, because professional cooks have long known that this method assures the good results in preparing so many types of foods.

For information on cooking utensils see introduction section of Convection/Combination cookbook and page 28 of this manual.

Auto Preheating

Preheat when indicated in recipes.
Preheat only with Convection Cooking. It is not applicable to Microwave or Combination Cooking. For your convenience, this oven is equipped with Auto Preheating feature so that you don't have to set preheating time or reset oven temperature after preheating for cooking.

Oven Temp

Step 1. Press continuously or tap Oven Temp Pad for desired oven temperature.
—Clock time disappears. CONV indicator light turns on. Selected oven temperature appears in display window.

Start

Step 2. Touch Start Pad.
—Oven light turns on. Turntable begins to rotate. Preheating starts and CONV indicator light begins to blink. "P" for "PREHEATING" appears and remains in display window.

—When preheating is completed "P" in display window begins to blink. Oven beeps three times. Oven light stays on and turntable continues to rotate. CONV indicator light stops blinking and stays on.

NOTE: 1) After completion of preheating, be sure to open oven door and place food inside oven to start Convection Cooking by time or with temperature probe.
If oven door is not opened after preheating, oven will maintain the selected temperature for 30 minutes. After 30 minutes, oven will shut off automatically.
2) Oven should be preheated with the Glass Ceramic Tray in place.
3) For more detailed information on when to preheat, refer to your Panasonic Convection/Combination Cookbook.

Time Cooking

10 1 10 1

Step 1. After Auto Preheating, set cooking time by pressing continuously or tapping Time Pads.
—"P" disappears and cooking time appears in display window.

Start

Step 2. Touch Start Pad.
—Oven light turns on. Convection cooking begins and CONV indicator light begins to blink.
Turntable begins to rotate.
Cooking time counts down.

Note: 1) When selected cooking time is less than one hour, time counts down second by second.
2) When selected cooking time is over one hour, time counts down minute by minute until only "59 00" (59 minutes) remain. Display then indicates minutes and seconds and counts down second by second.

—When cooking is completed, oven beeps five times and shuts off automatically. Turntable stops. CONV indicator light and oven light turn off. Time of day appears in display window.

Temperature Probe Cooking

Step 1. After Auto Preheating, insert temperature probe horizontally into center of food and place in oven. Carefully connect probe jack to oven ceiling receptacle.
—TEMP indicator light turns on.

Temp Probe

Step 2. Select temperature of food by pressing continuously or tapping Temp Probe Pad.
—"P" disappears and selected temperature of food appears in display window.

Start

Step 3. Touch Start Pad.
—Convection cooking begins. Oven light turns on. CONV indicator light begins to blink. Turntable rotates. Current temperature of food is displayed in 5°F increments starting at 100°F. If starting temperature is lower than 100°F, "L95F" (meaning lower than 100°F) will be displayed until food reaches 100°F.
If the starting temperature is higher than 100°F, current temperature of food will be displayed and count up in 5°F increments.
—When food reaches selected temperature, oven beeps five times and shuts off automatically. Turntable stops. CONV indicator and oven lights turn off. Time of day appears in display window.
Note: If food is at a higher temperature, when placed in oven than selected food temperature, oven shuts off immediately after Start Pad is touched.

Step 5. Remove temperature probe from oven ceiling receptacle.
—TEMP indicator light turns off.

Note: Refer to IMPORTANT on page 18, and CAUTION on page 29, for temperature probe use.

NOTE: 1) If Auto Preheating is not necessary, set oven temperature and desired time or temperature for probe.
2) Convection can be used with Microwave in program cooking. However, convection can only be used for one stage of cooking. Following programs are available.
*Convection—Microwave—Microwave
*Microwave—Convection—Microwave
*Microwave—Microwave—Convection
3) Convection can not be used with Combination.
4) Touching Oven Temp Pad during Convection Cooking shows programmed oven temperature in display window.

Time Cooking

10 1 10 1

Step 1. After Auto Preheating, set cooking time by pressing continuously or tapping Time Pads.
—"P" disappears and cooking time appears in display window.

Start

Step 2. Touch Start Pad.
—Oven light turns on. Convection cooking begins and CONV indicator light begins to blink.
Turntable begins to rotate.
Cooking time counts down.

Note: 1) When selected cooking time is less than one hour, time counts down second by second.
2) When selected cooking time is over one hour, time counts down minute by minute until only "59 00" (59 minutes) remain. Display then indicates minutes and seconds and counts down second by second.

—When cooking is completed, oven beeps five times and shuts off automatically. Turntable stops. CONV indicator light and oven light turn off. Time of day appears in display window.

Temperature Probe Cooking

Step 1. After Auto Preheating, insert temperature probe horizontally into center of food and place in oven. Carefully connect probe jack to oven ceiling receptacle.
—TEMP indicator light turns on.

Temp Probe

Step 2. Select temperature of food by pressing continuously or tapping Temp Probe Pad.
—"P" disappears and selected temperature of food appears in display window.

Start

Step 3. Touch Start Pad.
—Convection cooking begins. Oven light turns on. CONV indicator light begins to blink. Turntable rotates. Current temperature of food is displayed in 5°F increments starting at 100°F. If starting temperature is lower than 100°F, "L95F" (meaning lower than 100°F) will be displayed until food reaches 100°F.
If the starting temperature is higher than 100°F, current temperature of food will be displayed and count up in 5°F increments.
—When food reaches selected temperature, oven beeps five times and shuts off automatically. Turntable stops. CONV indicator and oven lights turn off. Time of day appears in display window.
Note: If food is at a higher temperature, when placed in oven than selected food temperature, oven shuts off immediately after Start Pad is touched.

Step 5. Remove temperature probe from oven ceiling receptacle.
—TEMP indicator light turns off.

Note: Refer to IMPORTANT on page 18, and CAUTION on page 29, for temperature probe use.

NOTE: 1) If Auto Preheating is not necessary, set oven temperature and desired time or temperature for probe.
2) Convection can be used with Microwave in program cooking. However, convection can only be used for one stage of cooking. Following programs are available.
*Convection—Microwave—Microwave
*Microwave—Convection—Microwave
*Microwave—Microwave—Convection
3) Convection can not be used with Combination.
4) Touching Oven Temp Pad during Convection Cooking shows programmed oven temperature in display window.

Temp Probe

Step 3. Select Temperature of food by pressing continuously or tapping Temp Probe Pad.
—Previously selected combination program disappears. Selected temperature of food appears in display window.

Start

Step 4. Touch Start Pad.
—Oven light turns on. Combination cooking begins and COMB indicator light begins to blink. Turntable begins to rotate.
Current temperature of food is displayed in 5°F. increments starting at 100°F. If starting temperature is lower than 100°F., "L 95F" (meaning lower than 100°F.) will be displayed until food reaches 100°F.. If the starting temperature is higher than 100°F., current temperature of food will be displayed and count up in 5°F. increments.
—When food reaches selected temperature of food, oven beeps five times and shuts off automatically. Turntable stops, COMB indicator and oven lights turn off. Time of day appears in display window.

Note: If food is at a higher temperature, when placed in oven, than selected food temperature, oven shuts off immediately after Start Pad is touched.

Step 5. Remove temperature probe from oven ceiling receptacle.
—TEMP indicator light turns off.

Refer to IMPORTANT on page 18 and CAUTION on page 29 for temperature probe use.

NOTE: 1) Combination can be programmed with Microwave cooking. However, Combination can only be used for one stage. Following programs are available:
*Combination—Microwave—Microwave
*Microwave—Combination—Microwave
*Microwave—Microwave—Combination
2) Combination can not be programmed with Convection.
3) Touching Temp Probe Pad during cooking shows the selected final food temperature in display window.

How To Use Special Controls

Temp Hold

The oven will keep food warm when Temperature Hold is used in conjunction with any temperature probe cooking operation (including Auto Combination Cooking) by holding final temperature of food you select.

Step 1. Insert temperature probe horizontally into center of food and place in oven. Connect probe jack to oven ceiling receptacle.
—TEMP Indicator light turns on.

Desired Temp Probe Cooking Program

Step 2. Program desired temperature probe cooking according to directions already given in this manual.
—Selected temperature probe cooking program and indicator light appear in display window.

Timer/Delay Start/Stand Time

Timer

Delay/ Stand

Step 1. Touch Delay/Stand Pad.
—Clock time disappears from display window. DELAY indicator light turns on.

10 1 10 1

Step 2. Set desired amount of time by pressing continuously or tapping Time Pad.
—Selected amount of time appears in display window. (A maximum of 9 hours and 99 minutes may be programmed three times by repeating Step 1 and 2.)

Start

Step 3. Touch Start Pad.
—Oven light does not turn on. No cooking activity begins. Turntable does not rotate. Only the time displayed starts to count down.
—When programmed time has elapsed, oven beeps five times and shuts off automatically. DELAY indicator light turns off. Time of day appears in display window.

NOTE: 1) If three periods of time are programmed, oven will beep twice after each of the first two periods count down. After third time period oven will beep five times and shut off automatically.
2) If door is opened when the time is displayed counting down as with the timer function, the count down will not stop.
3) When selected amount of time for one stage is over one hour, the seconds will not visibly count down in display window until only 59 minutes remain. The timer will then display minutes and seconds, and seconds will visibly count down.

Delay Start

Delay/ Stand

Step 1. Touch Delay/Stand Pad.
—Clock time disappears from display window. DELAY indicator light turns on.

10 1 10 1

Step 2. Set desired amount of time for which you want to delay the start of cooking by pressing continuously or tapping Time Pads.
—Selected amount of time appears in display window in minutes and seconds. (A maximum of 9 hours and 99 minutes may be programmed twice by repeating Step 1 and 2.)

Desired Cooking Program

Step 3. Program desired cooking according to directions (page 15 and page 16) already given in this manual, i.e. any temperature probe cooking or time cooking, not Auto Sensor Cooking.
—Delay time and DELAY indicator light disappears. Selected program and indicator light appears in display window.

Start

Step 4. Touch Start Pad.
—Selected program and indicator light disappears.
Oven light does not turn on; no cooking activity begins.
Turntable does not rotate. Delay time appears and counts down. DELAY indicator light and other indicator lights stay on.
—When delay time has elapsed, oven beeps twice and enters into previously selected cooking function.
Oven light turns on and turntable begins to rotate.
—When cooking is completed, oven beeps five times and shuts off automatically. Turntable stops. Oven light and other indicator light turn off.
Time of day appears in display window.

NOTE: 1) If start of cooking is delayed (up to 9 hours and 99 minutes), only two stage cooking can be programmed. If delay time is set as first and second stages, only third stage cooking can be programmed.
2) When selected amount of time for one stage is over one hour, the seconds will not visibly count down in the display window until only 59 minutes remain. The timer will then display minutes and seconds, and seconds will visibly count down.

Stand Time

Desired Microwave Program

Step 1. Program desired microwave function including Auto Sensor Cooking according to directions already given in this manual.
—Selected program and indicator light appear in display window.

Delay/ Stand

Step 2. Touch Delay/Stand Pad.
—Previously selected program and indicator light disappear from display window.
DELAY (Stand) indicator light turns on.

10 1 10 1

Step 3. Set desired amount of time by pressing continuously or tapping Time Pads. (A maximum of 9 hours 99 minutes may be programmed twice.)
—Stand time appears in display window.

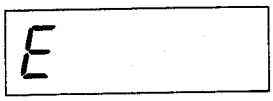
Start

Step 4. Touch Start Pad.
—Oven light turns on. Previously selected program appears in display window. Microwave activity begins and indicator light blinks. Turntable begins to rotate.
—When microwave program is completed, turntable stops, oven beeps twice, and standing time counts down.
DELAY (Stand) indicator light turns on while oven light turns off.
—At the end of standing time, oven beeps five times and shuts off automatically.
DELAY (Stand) indicator light turns off. Time of day appears in display window.

NOTE: 1) Oven does not accept Stand Time after Convection or Combination cooking.
2) A stand time may be programmed up to twice after one stage or once after two stage microwave cooking program, but not after three stage microwave cooking.
3) When selected amount of time for one stage is over one hour, the seconds will not visibly count down in the display window until only 59 minutes remain. The timer will then display minutes and seconds, and seconds will visibly count down.

Automatic Checking Mechanism

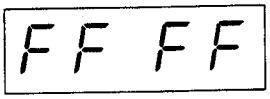
"E" Display in Window:



If "E" appears in display window, it is an indication that an error has been made while programming the oven.
Touch Stop/Reset Pad to clear previous entries.
If necessary, consult appropriate section of this manual before re-programming oven.
Some examples under which "E" indicating ERROR, will appear are:

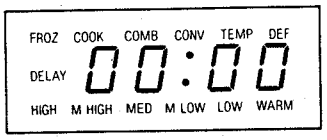
- When clock is set for an impossible time such as 12:63 or 27:30, etc.
- When Defrost or Stand Time is selected after Convection or Combination Cooking.
- When Auto Sensor Cooking is selected after Power/Time cooking program.

"FFFF" Display in Window:



If "FFFF" appears in display window, it is an indication that the oven has automatically shut off due to a malfunction of the Auto Sensor Control or Temp Probe settings.
Touch Stop/Reset Pad to clear "FFFF" from display window and reprogram oven. If display continues to show "FFFF" even after touching Stop/Reset consult an authorized Panasonic Servicenter.

Power Failure etc.:



When the oven is not being used for cooking, the display window will show the time of day.
If the oven is affected by a temporary power failure or the plug is removed from electric outlet and then reinserted, the display window will automatically show four zeros with the colon blinking and all the indicator lights. To reset correct time of day, simply follow the clock set instructions.

Care of Your Microwave/ Convection Oven

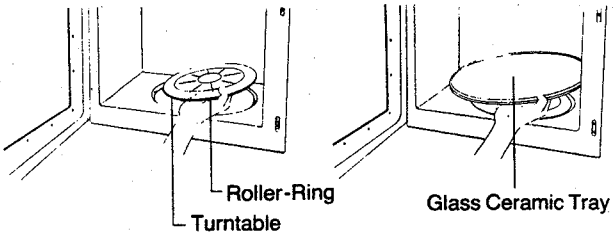
1. The interior sides, ceiling and floor of the oven are stainless steel. Clean with a damp sudsy cloth, rinse with well wrung out cloth. To prevent baked-on soil clean spatters as they occured. For hard to remove soil, clean with scouring pads or a nonabrasive scouring powder such as Bon Ami® (Faultless Starch Company).

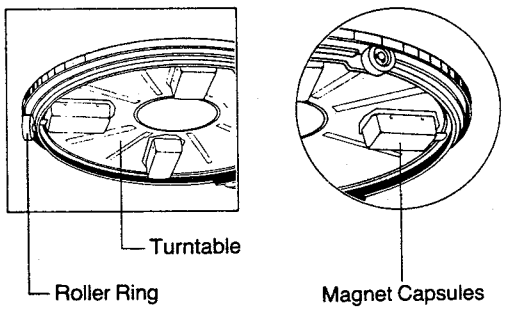
2. The interior back panel of the cavity is covered with a catalytic (continuous clean) coating. Clean with a damp sudsy cloth, rinse with well wrung out cloth. DO NOT use cleaners, cleansers or scouring pads; they will damage surface.

3. Wash the glass ceramic oven tray in warm sudsy water or in the dishwasher. Cool tray completely before washing. If grease accumulates or is difficult to remove, the tray may be cleaned with a nonabrasive nylon mesh scouring pad and nonabrasive cleanser such as Bon Ami®.

4. Any spatters or food soils should be wiped off the oven door while they are still warm. Use a sudsy cloth, rinse with clear water and wipe dry.

5. Frequently clean the turntable unit (turntable and roller-ring) in warm sudsy water. When removing the roller-ring from the turntable for cleaning be sure to re-install into the proper position.
   Note: Because the mechanism turning the ceramic tray utilizes magnetic-capsules, remove your watch before handling.





Note:
- Roller-ring fits under metal clips on magnetic capsules.
- The turntable and roller-ring should be frequently removed for cleaning. There is a possibility of excessive noise from the turntable if food spills are allowed to collect on the rollers or the bottom of the oven. Simply wipe the bottom surface of the oven with a mild solution of water and dishwashing liquid or window cleaner and dry. The turntable and roller-ring may be washed in mild sudsy water or dishwasher. Cooking vapors collect during repeated use, requiring occasional cleaning. Clean as above, the bottom surface or roller-ring.

NOTE: DO NOT USE YOUR TURNTABLE IN ANY OTHER PANASONIC MICROWAVE OVENS.
ALSO, DO NOT USE OTHER TURNTABLES IN YOUR MICROWAVE/CONVECTION OVEN.

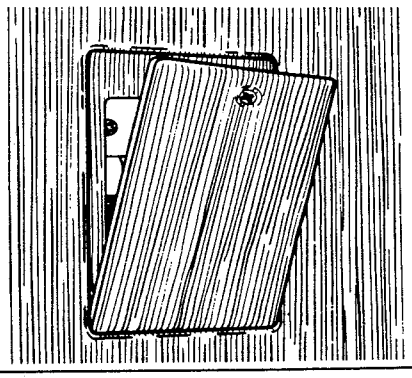
6. The outside oven surfaces should be cleaned with soap and water, rinsed, and dried with a soft cloth. To prevent damage to the operating parts inside the oven, water should not be allowed to seep into the ventilation openings.

7. If steam accumulates inside or around the outside of the oven door, wipe with a soft cloth. This may occur when the oven is operated under high humidity conditions.

8. DO NOT USE SPRAY-ON OR PASTE-TYPE OVEN CLEANER. It will damage some of interior and exterior surfaces of the oven.

9. Replacement of the oven light:
   When the oven light becomes defective, you can replace it yourself. Please follow the directions below carefully.

   Step 1. Turn off the oven and unplug it.
   Step 2. Remove the screw from the oven light cover which is located on the left side of the cabinet.
   Do not remove any other panels from the unit.
   Step 3. Replace the oven light with only 115–125 V, 20 W bulb, or if this bulb is not available locally simply contact the nearest authorized Panasonic Parts Department.
   Step 4. Replace the oven light cover.



Caution

General:

1. Do not attempt to tamper with or make any adjustments or repairs to door, control panel, safety interlock switches or any other part of the oven. Repairs should only be done by a qualified serviceman.

2. Do not operate oven empty by Microwave.

3. Do not try to dry clothes or any other materials in oven. There is a possibility of the cloth catching on fire.

4. Do not cook directly on Glass Ceramic Tray, paper towels or napkins, etc. unless indicated in cookbook.

5. Do not use newspaper in place of paper towels for microwave cooking.

6. For the most accurate programming of the unit, tap the center of each pad securely. Do not touch several pads at one time or touch in between pads. A beep sound should be heard with each tap.

7. Do not hit or strike the control panel with objects such as silverware, utensils, etc. Breakage may occur. In case the panel should be broken, consult a qualified Panasonic Servicenter.

8. Do not use recycled paper products since they may contain impurities which may cause sparks and/or fires when used in microwave cooking.

9. Do not place hot Glass Ceramic Tray into water just after cooking. This is to avoid breakage or damage to it.

10. Do not continue cooking with metal utensils if sparking appears. See cooking utensils section in cookbook.

11. Do not touch oven wall when removing food after Convection and Combination cooking. Convection heating causes the oven wall to become hot to touch. Use pot holder.

12. Never use your microwave oven for home canning. Microwave ovens are not designed to permit proper canning. Improperly canned food may spoil and be dangerous to consume.
Leave canning to the proven methods of water bath or steam pressure canners. (See your cookbook for further information.)

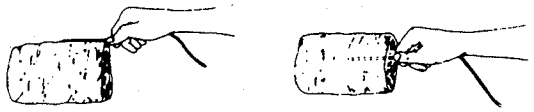
Temperature Probe:

1. DO NOT ALLOW the Temperature Probe to touch the Rack, the oven interior or any metal utensils.

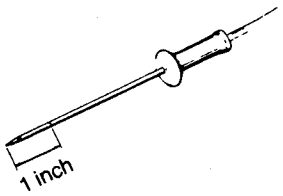
2. DO NOT ATTEMPT to insert the Temperature Probe into solidly frozen food.

3. DO NOT USE the Temperature Probe in other manufacturer's ovens. Also do not use other manufacturer's probes and other Panasonic probes in the DIMENSION 3.
USE ONLY the Probe designed for the DIMENSION 3.

4. INSERT THE TEMPERATURE PROBE HORIZONTALLY into the center-most part of the food.



5. THE TEMPERATURE PROBE must be at least 1 inch (3 cm) into food for an accurate temperature reading.



6. USE POT HOLDERS when removing the Temperature Probe from ceiling receptacle.

7. DO NOT IMMERSE THE TEMPERATURE PROBE in water or wash in dishwasher.
Clean with a soft cloth and mild detergent.

8. HANDLE THE TEMPERATURE PROBE CAREFULLY, clean after each use and store in a container.

9. DO NOT STORE THE TEMPERATURE PROBE inside oven cavity.

Accessory Caution

Baking/Warming Rack (High Rack & Low Rack):

1. DO NOT USE THE RACKS if the glass ceramic feet are missing or broken.
2. DO NOT ALLOW THE RACK to touch the oven door or any portion of the oven cavity.
3. DO NOT USE THE RACKS without the Glass Ceramic Tray in place.
4. DO NOT USE ANY METAL UTENSIL on the racks when using Microwave or Combination cooking.

NOTE: The High Baking Rack may be used for two-level reheating of leftovers with Microwave or Combination cooking.
Follow the procedure given below.
1. Center the Rack on the Glass Ceramic Tray.
2. Arrange dishes in oven, one on the Glass Ceramic Tray, one on the Rack.
3. Remove the Rack with pot holders after reheating.

Cookie Sheet:

1. USE THE COOKIE SHEET only with CONVECTION cooking.
2. For two-level baking with CONVECTION cooking, place the Cookie Sheet on the Low Baking Rack.

Spatter Shield:

1. DO NOT USE THE SPATTER SHIELD without the Glass Ceramic Tray in place.
2. DO NOT USE ANY METAL UTENSILS except the Low Baking Rack with ceramic feet on the Spatter Shield when using Microwave or Combination cooking.

Glass Ceramic Tray:

1. DO NOT OPERATE THE OVEN without the Glass Ceramic Tray in place.
2. DO NOT USE ANY OTHER GLASS TRAY with this oven.
3. DO NOT PLACE THE GLASS CERAMIC TRAY in water immediately after cooking. Allow to cool completely before washing.
4. DO NOT COOK DIRECTLY on the Glass Ceramic Tray.

Metal Turntable:

1. The Turntable and Glass Ceramic Tray must always be used while cooking.
2. DO NOT PLACE the Metal Turntable in any other Panasonic microwave oven: the Turntable will not revolve properly and arcing may occur.
3. DO NOT USE any other Panasonic Turntable with this Oven except for the one supplied.
4. DO NOT ALLOW ANY METAL UTENSIL to touch the Turntable while using.

Other Helpful Cooking Instructions

For best results and more enjoyable cooking, please refer to your Cookbooks.

General-Time Variations

Foods vary through the country and factors such as size and shape may cause cooking times to differ from those given in the cookbooks.
For this reason, cooking times given can only be approximate. Factors that may affect cooking time include starting temperature, altitude, volume, size and shape of foods and utensils used. As you become familiar with the oven, you will be able to adjust for these factors.
Remember, it is always better to undercook than overcook.
If food is undercooked, you can always continue to cook it. If it is overcooked, nothing can be done.

Microwave Cooking

Defrosting:

1. Foods that have been frozen in non-metallic wrapping can be placed directly in the oven for thawing.

2. Defrost according to Defrost Charts found in the Panasonic Microwave Cookbook.

3. If some areas of food are defrosting faster than others, cover with small pieces of aluminum foil. This helps slow down the defrosting process.

4. Some foods should not be completely defrosted before cooking. (Example, fish cooks so quickly it is better to begin cooking while still slightly frozen.)

Cooking:

1. When cooking food by time, begin by using minimum time and check occasionally for doneness. The microwave oven cooks so quickly it is easy to overcook food.

2. Small quantities of food or foods with low moisture content may burn or dry out and become hard if cooked too long.

3. Do not boil eggs in the shell; they may burst.

4. Foods with non-porous skin or a membrane such as apples, potatoes, or egg yolks, should be pierced to prevent bursting.

Microwave Browning:

There are a few foods which are not cooked long enough in the microwave oven to brown and for more eye appeal may need a browning agent. See Panasonic Microwave Cookbook for specific details.

Browning Dish or Grill:

A browning dish or grill may be used to achieve a brown exterior on small items. It is designed only for use in microwave oven. Do not use for Convection, or Combination Cooking, or in a conventional oven or on any surface unit. Preheating times vary depending on the size of the browning accessory and upon the food being prepared. Always follow instructions provided by the browning dish or grill manufacturer.

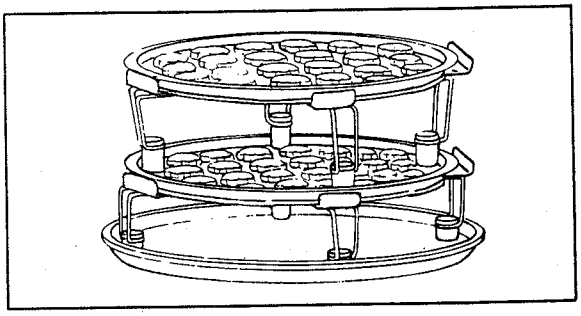
Convection Cooking

1. When baking cakes, breads or muffins, use the Cookie Sheet or metal pans for best baking and browning results.

2. When baking cookies or appetizers two-level baking is available by using the optional Cookie Sheet.

Note: The Additional Cookie Sheets are available from Panasonic. Please ask Panasonic Servicenter for part number MCS1M0.

3. Any food that can be baked in a conventional gas or electric oven can be successfully baked by Convection Cooking.



Combination Cooking

1. For best roasting and browning results, whole roasts and poultry should be cooked directly on the Low Baking Rack.
The Glass Ceramic Tray and Spatter Shield, placed on the turntable of the oven, will collect fats and juices and help prevent them from spattering.

2. Preheating oven is not necessary when cooking meats, poultry.

3.Temperature Probe Cooking is the recommended choice for all tender roasts, whole chickens and turkeys.

4. A spray-type vegetable oil product may be applied to Low Baking Rack to prevent food from sticking.
It may also be used on Glass Ceramic Tray and Spatter Shield for easier clean-up.

NE-9930 SCHEMATIC DIAGRAM

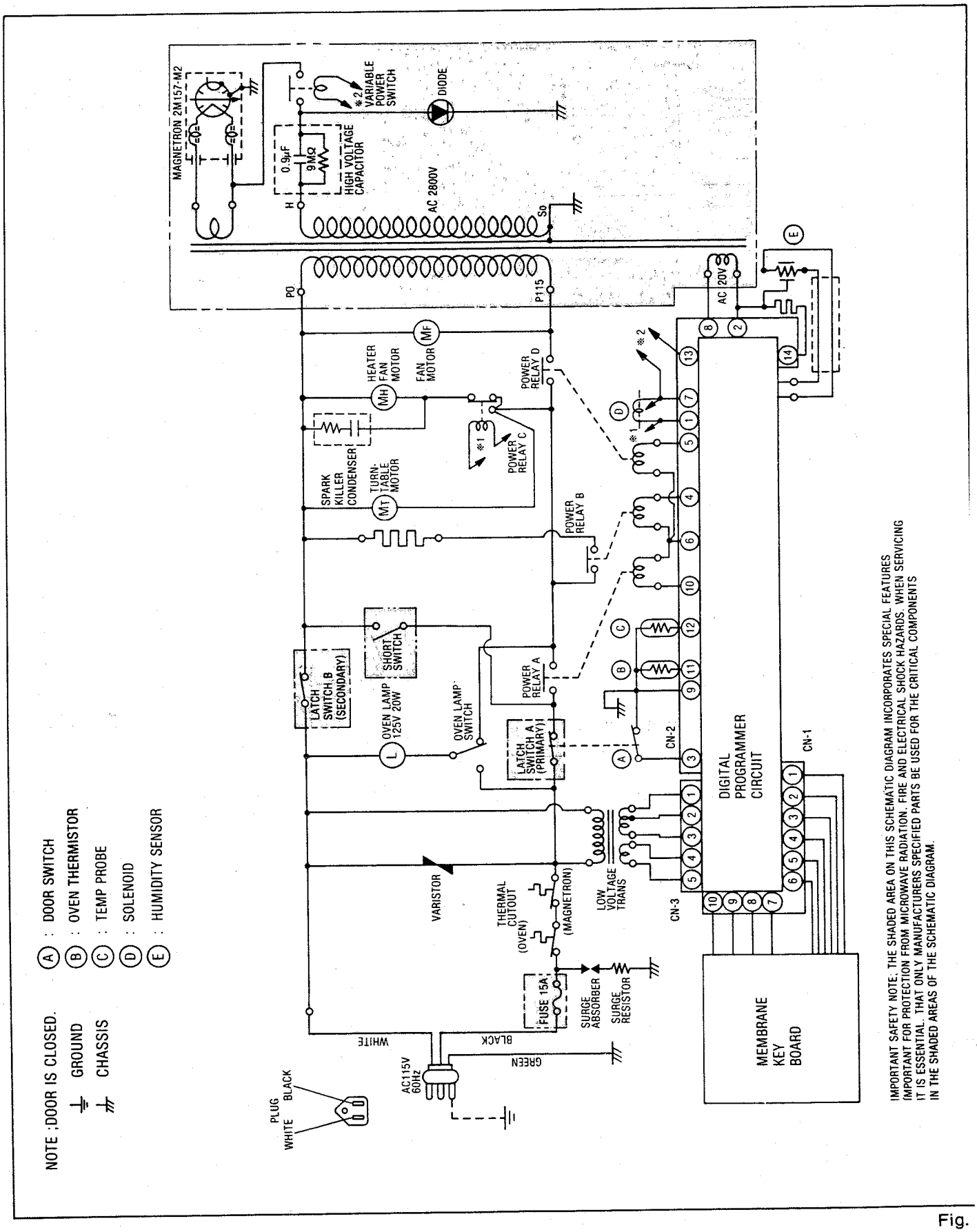


Fig.

NE-9930C SCHEMATIC DIAGRAM

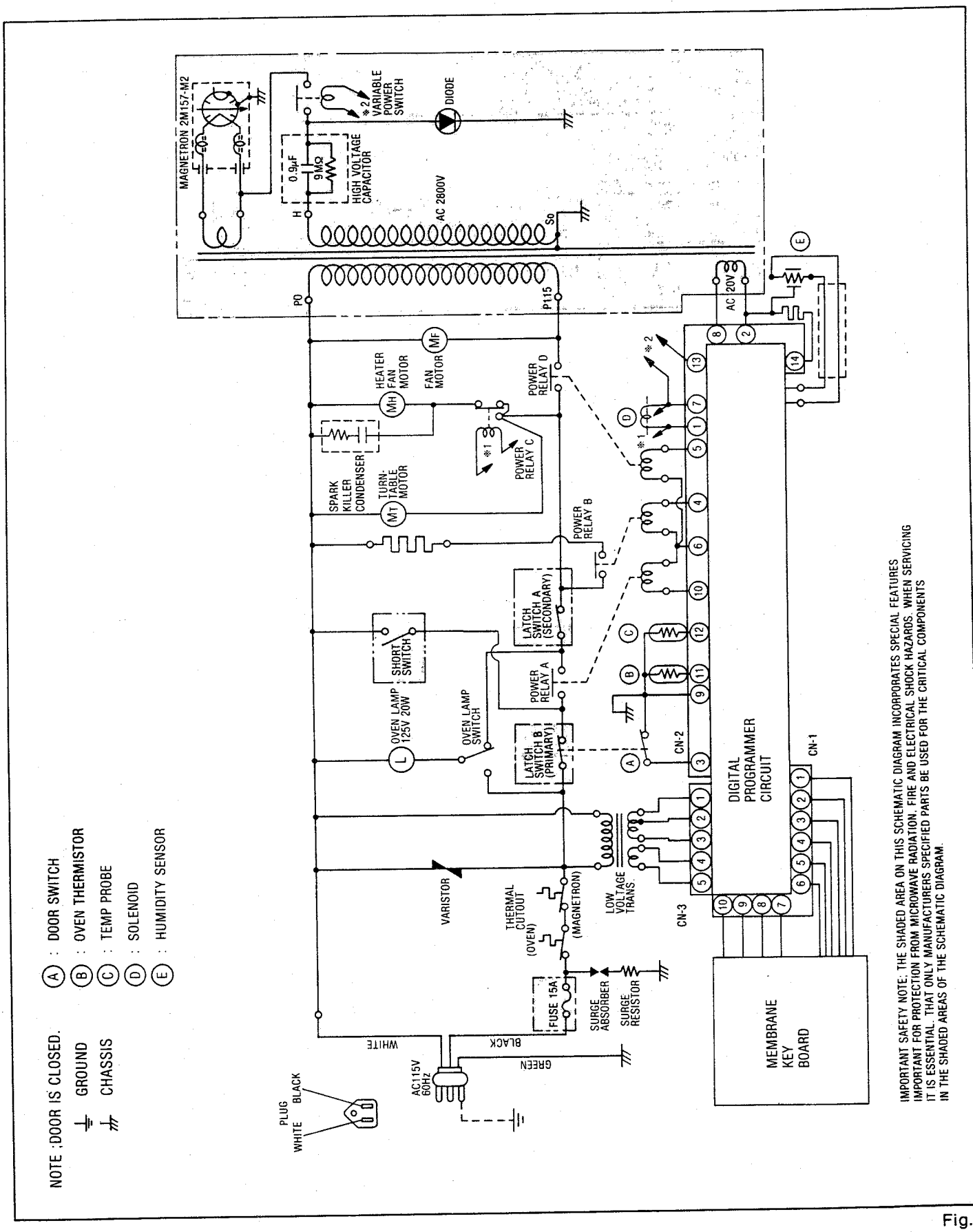
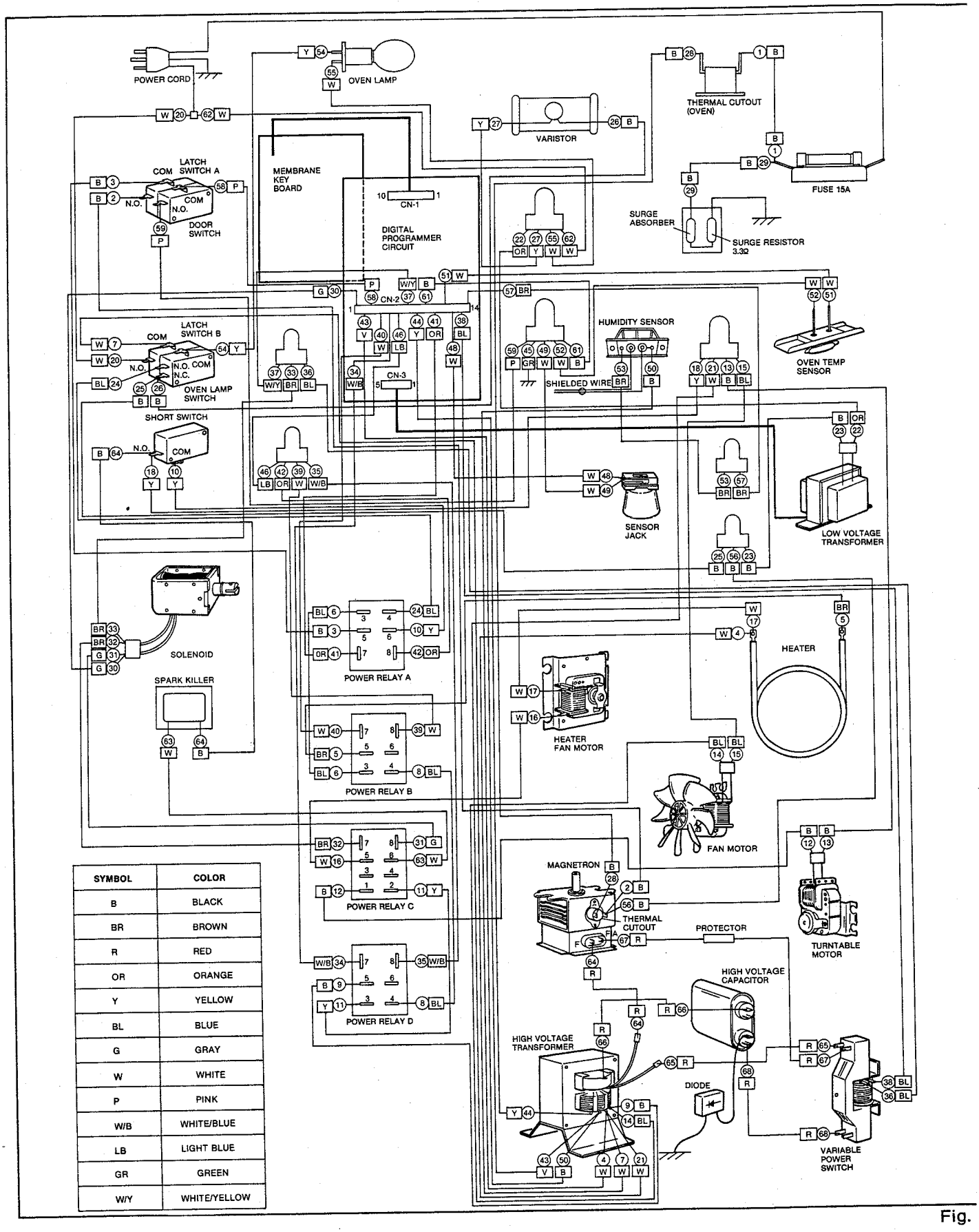


Fig. 2

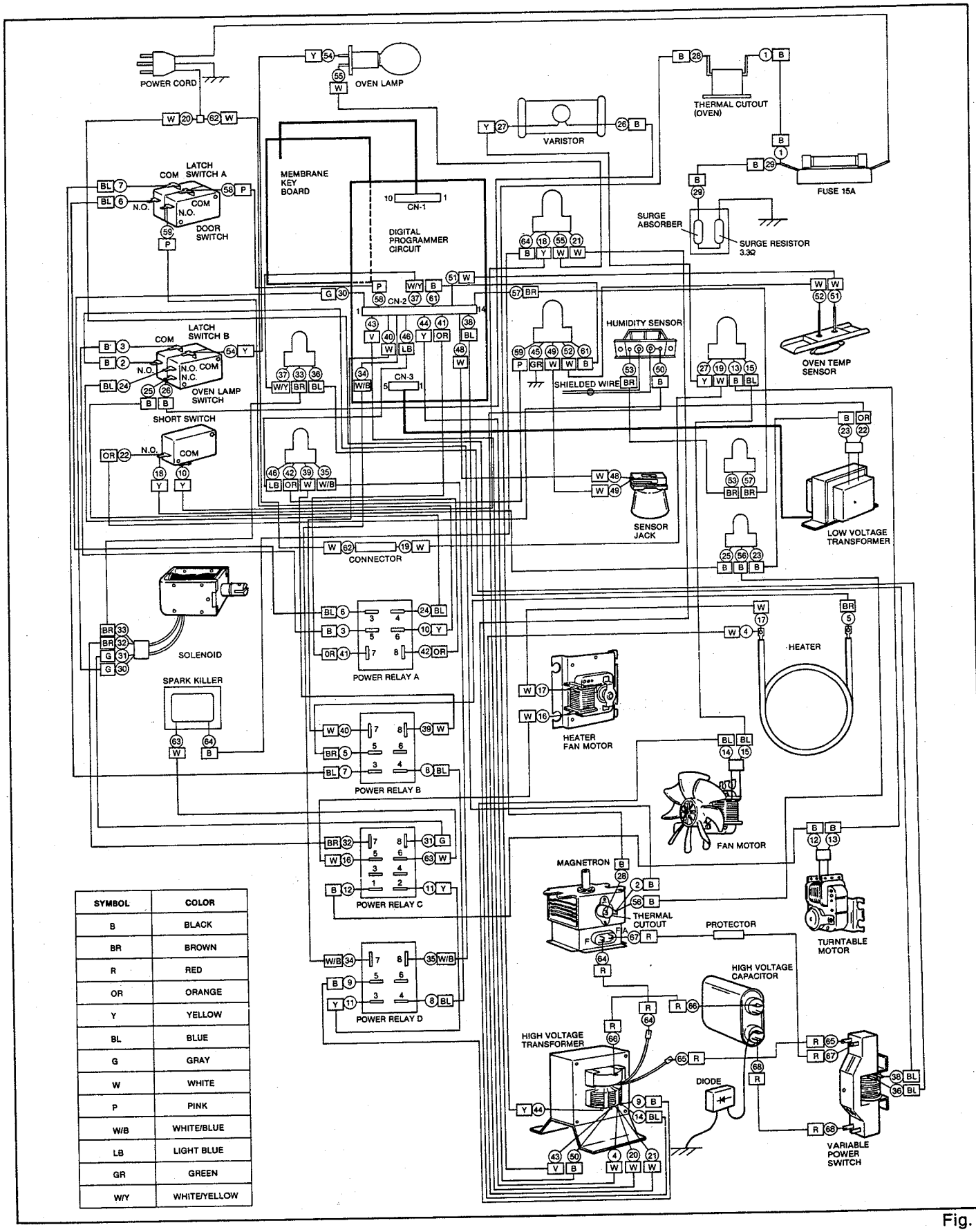
NE-9930 WIRING DIAGRAM



SYMBOL	COLOR
B	BLACK
BR	BROWN
R	RED
OR	ORANGE
Y	YELLOW
BL	BLUE
G	GRAY
W	WHITE
P	PINK
W/B	WHITE/BLUE
LB	LIGHT BLUE
GR	GREEN
W/Y	WHITE/YELLOW

Fig.

NE-9930C WIRING DIAGRAM



SYMBOL	COLOR
B	BLACK
BR	BROWN
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G	GRAY
W	WHITE
P	PINK
W/B	WHITE/BLUE
LB	LIGHT BLUE
GR	GREEN
W/Y	WHITE/YELLOW

Fig. 4

CIRCUIT DESCRIPTION

1. Variable cooking control

The coil of variable power switch is energized intermittently by the digital programmer circuit, when the oven is set at any power selection except for High power position. The digital programmer circuit controls the ON-OFF time of the variable power switch contacts in order to vary the output power of the microwave oven from "Warm" to "High" power. One complete ON and OFF cycle of the variable power switch is 22 seconds.
The relation between indications on the control panel and the output of the microwave oven is as shown in **Fig. 5**.

(CYCLIC) DEFROST

When defrost is selected and the desired defrosting time is chosen, the operation is as follows after the start pad is touched.

(A) Defrost on this model is an automatic cycle and divides the entire defrost cycle into 8 alternating periods. 4 periods of actual defrosting power and 4 periods of standing time. (See **Fig. 6**)

(B) During any of the defrosting periods, the variable power switch, which is controlled by the DPC, is ON for 7 seconds and OFF for 15 seconds.(see **Fig. 7**)

NOTE: **When defrosting time is selected for not more than 7 seconds, the variable power switch will be energized and de-energized every 1 second.**

(C) During any of the standing periods the variable power switch is not activated by the DPC, so there is no microwave power.

(D) The length of each defrosting and standing period within the complete automatic defrosting cycle is decided by the DPC. Basically the complete amount of automatic defrost time that is selected by the user is divided into 8 time periods.
These time periods are not necessarily equal, but generally they are very close to being equal periods.

Example #1: If defrosting time is selected for 2 minutes 56 seconds, each operating period will be as follows :(see **Fig. 8**)
2 minutes 56 seconds = 176 seconds
176/8 = 22

Example #2: If Defrosting time is selected for 5 minutes, each operating period will be as follows: (see **Fig. 9**)
5 minutes = 300 seconds
300/8 = 37 and remainder is 4

INDICATION	OUTPUT POWER AGAINST HIGH POWER	ON, OFF TIME ON VARIABLE POWER SWITCH
High	22/22 (100%)	22S ON, 22S ON
M. High	20/22 (91%)	20S ON, 2S ON/OFF, OFF
Med	15/22 (68%)	15S ON, 7S OFF, ON, OFF
M. Low	11/22 (50%)	11S ON, 11S OFF, ON, OFF
Low	6/22 (27%)	6S ON, 16S OFF, ON, OFF
Warm	2/22 (10%)	2S ON, 20S OFF, OFF

Fig. 5

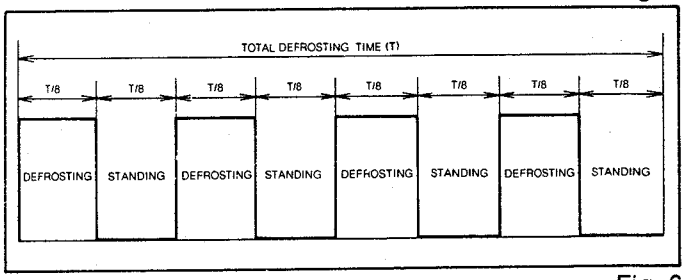


Fig. 6

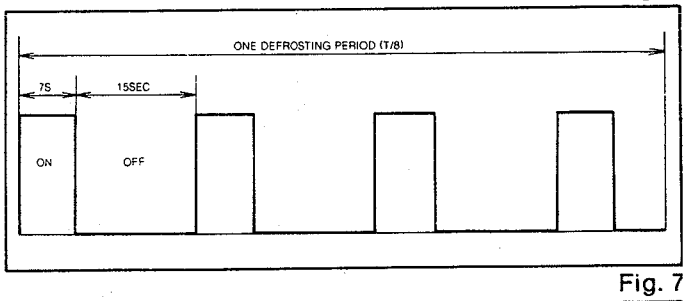


Fig. 7

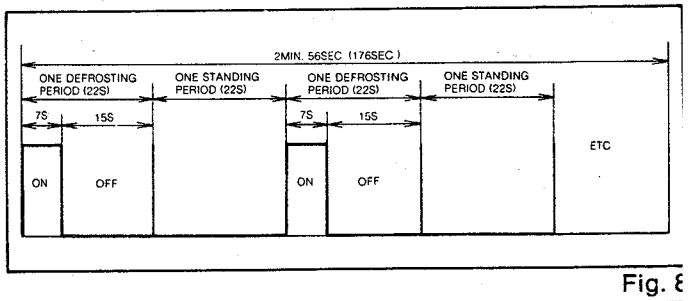


Fig. 8

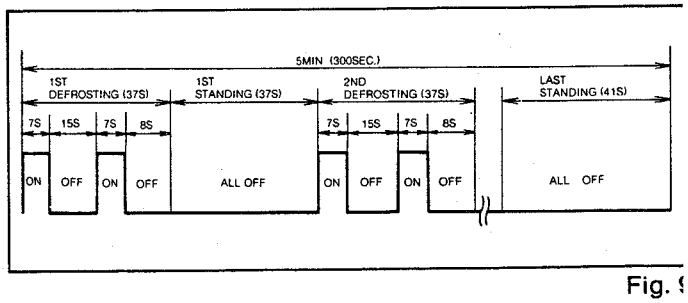


Fig. 9

2. Temperature cooking control

The digital programmer circuit turns off power relay A and power relay D when the food temperature, which is detected by the thermistor, reaches the selected temperature and stops the oven functioning automatically. Current temperature of the food is displayed in rising 5°F increments starting at 100°F. If starting temperature is lower than 100°F, "L90F" signifying lower than 100°F and will be displayed until food reaches 100°F. See **Fig. 10** for circuit description.

NOTE: When the temp-hold feature is selected, the digital programmer circuit turns the variable power switch on and off to maintain the desired temperature within the period as selected. When the tempholding period has elapsed, the DPC turns off power relay A and power relay D and stops the oven.

CONVECTION COOKING

1. Description of heater control

Please refer to **Fig. 11 and 12**.

The digital programmer circuit functions to control ON-OFF of the heater in order to control oven temperature.

(A) After the start pad is touched with the desired convection program set, 24V DC signal comes out from the digital programmer circuit and is applied to power relay A and B.

(B) When power relay B contacts close, power source voltage (115V AC) is applied to the heater.

(C) When the oven temperature reaches the desired temperature you set, the digital programmer circuit (D.P.C.) catches the signal through oven temp. sensor. Then the D.P.C. works to stop supplying 24V DC signal to power relay B.

(D) When no signal is applied to power relay B, heater will turn off.

(E) After oven heater turns off, the oven temperature will increase for a while and then reduce as shown in **Fig. 11**.
When oven temperature goes lower than desired temperature you set, D.P.C. catches the signal through the oven temp. sensor and D.P.C. starts to supply 24V DC signal to power relay B again.

COMBINATION COOKING

1. Time cooking

Combination cooking combines both the functions of microwave and convection cooking. This is accomplished by microwave and convection cooking being done alternately during one combination cooking cycle.

Microwave Cooking

The variable power switch is energized intermittently. It turns on for 4 seconds and turns off for 18 seconds repeating the cycle of ON and OFF as shown in **Fig. 13**. This intermittent oscillation contributes to about 130W output in combination cooking program.

Convection cooking

The heater also turns on and off during combination cooking. The heater turns on only when the variable power switch turns off and microwave cooking stops. The heater turns off when the variable power switch contacts close and microwave cooking is in process. (see **Fig. 13**)

NOTE 1: Note that the heater may not be on during a heater on period if the preprogramed oven temperature has been reached.
This is due to the fact that the oven is keeping the preselected oven temperature constant, so of course the heater will only be on when it is needed and off when it is not needed. (see **Fig. 14**)

NOTE 2: As for temperatures of combination cooking for convection, the temperatures by each program are preprogramed in the microprocessor as shown in **Fig. 14.**

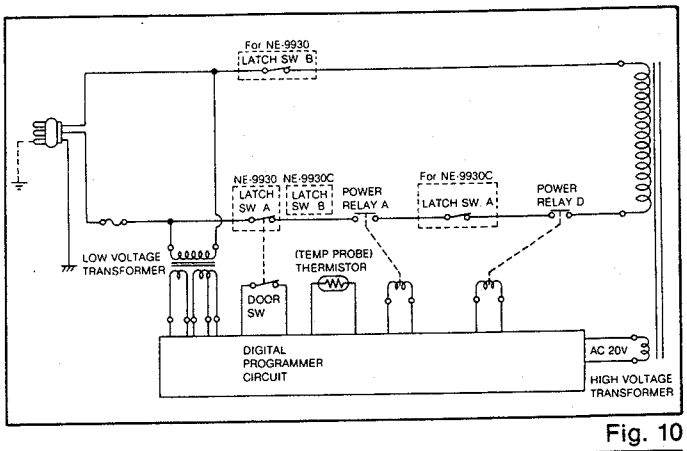


Fig. 10

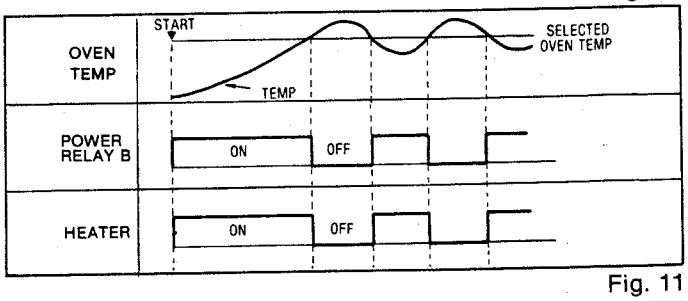


Fig. 11

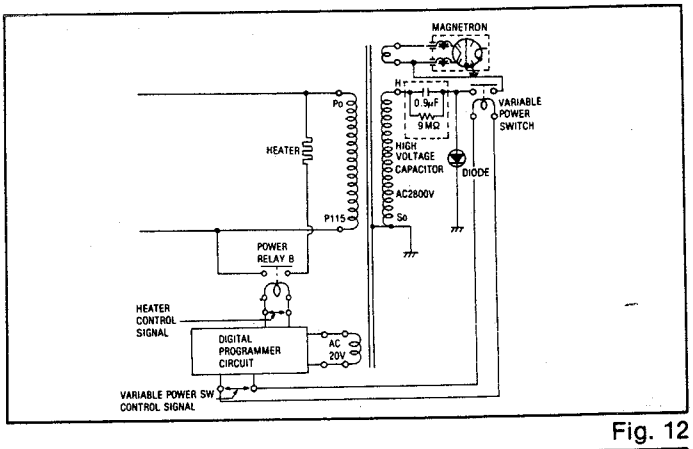


Fig. 12

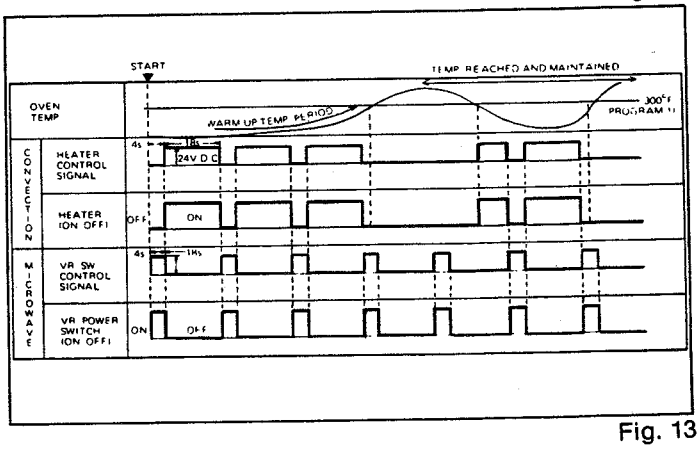


Fig. 13

COMBINATION PROGRAM	MICROWAVE POWER Pre-Programmed	OVEN TEMPERATURE Pre-Programmed
1	130W	300°F (149°C)
2	130W	325°F (163°C)

Fig. 14

AUTO SENSOR EXPLANATION, K FACTORS AND POWER LEVELS

AUTO SENSOR COOKING

Auto Sensor cooking is a revolutionary way to cook microwave without setting a power level or selecting a time. All that is necessary is to select an Auto Sensor Program before starting to cook.

Understanding Auto Sensor Cooking

As a food cooks, a certain amount of steam is produced. If the food is heated covered, this steam builds up and eventually escapes from the container. In Auto Sensor cooking a carefully designed instrument, called the humidity sensor element, senses this escape of steam. Then, based upon the Auto Sensor Program selected, the unit will automatically determine the correct power level and the proper length of time to cook the food.

NOTE: Auto Sensor cooking is successful with the foods and recipes found in the Auto Sensor Cooking Guide. Because of the vast differences in food composition, items not mentioned in the Cooking Guide should be prepared in the microwave oven using Power Select and Time features. Please consult Variable Power Microwave Cookbook for procedures.

AUTO COOKING PROCESS

Explanation of the Auto Cooking Process (see Fig. 15)

1) The shaded columns indicate when the humidity sensor heater is on.
2) During first 50 second period after pressing the start pad there is no microwave activity, and when calculating the T2 time by using the formula below make sure this 50 seconds is subtracted from the T1 time. In other words T1 time starts at 50 seconds after start pad is pressed.
3) T1 time.....The total amount of time it takes the microwave oven to switch to T2 time (subtract 50 seconds). During this time one of the Auto Sensor programs will be shown in the display window. (A1 — A8)
4) T2 time.....When the steam comes out from the cooking container placed in the oven, the humidity sensor detects it and the microprocessor calculates the balance of cooking time, which is called T2 time. This T2 time is then shown in the display and begins counting down.

NOTE: The humidity sensor is refreshed every 20 minutes during T1 time (This refreshing time is not included into T1 time.)

Balance of cooking time (T2 time)

The balance of cooking time, can be calculated by the following formula.

T2 time (in seconds) = K x T1 time

NOTE: When figuring out T2 time, the last digit of T1 time in seconds is rounded off to 0. For instance, if the T1 time is 76 seconds, the T2 time will be:

T2 = K x 70

Remember, the T1 time starts after the first 50 second period. The coefficient K is programmed into the microprocessor memory and they are listed in the following tables along with the P1 and P2 powers. (see **Fig. 16 and 17**)

NOTE: If the oven is operated in a high altitude area where air pressure is low, the food may not be properly cooked, because steam is usually generated sooner in this case. In order to cook the food properly in such an area, the K factor must be slightly higher. To increase the K factor, simply connect with a jumper wire as shown in **Fig. 18.**

CAUTION

Use no larger than a 25 watt soldering iron, whenever working on a D.P.C.

Example of calculating the T2 time

If the T1 time is measured to be 2 minutes and 25 seconds, after first 50 second period, and Auto program selected is COOK A4 :

T1 = 2 min. and 25 sec. → 2 min. and 20 sec.
T2 = K x T1
= 1.3 x 2 min. and 20 sec.
= 1.3 x 140 sec.
= 182 sec.
= 3 min. and 2 sec.

NOTE: If using a calculator, please remember the calculator rounds off in decimal numbers, so the T2 time will come out slightly different than if seconds are changed back to minutes by regular long division. When using a calculator, simply multiply the tenths by 60 to get the correct number of seconds.
For instance, take the T2 time in seconds from example. Using the calculator, divide 60 into 182 and the quotient will be 3.03. Then multiply 0.03 by 60 and the product will be approx. 2 seconds.

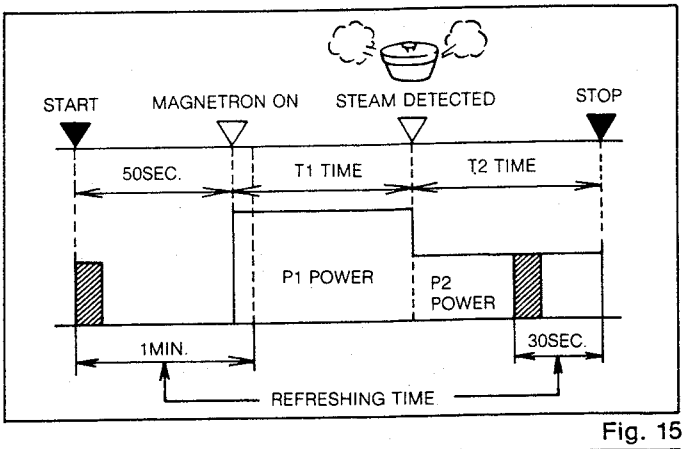


Fig. 15

COOK			
	P1 power	P2 power	K
A1	HIGH	—	0
A2	HIGH	M.LOW	4
A3	HIGH	M.LOW	2
A4	HIGH	M.LOW	1.3
A5	MED	M.LOW	2.5
A6	MED	MED	1.3—2
A7	MED	MED	1
A8	MED	MED	0.3

Fig. 16

FROZEN-COOK			
	P1 power	P2 power	K
A1	HIGH	MED	1
A2	MED	LOW	3.5
A3	MED	LOW	2.7
A4	MED	LOW	1.8 — 2.4
A5	HIGH	MED	0.8
A6	MED	LOW	0.4
A7	MED	MED	0.3
A8	MED	MED	1

Fig. 17

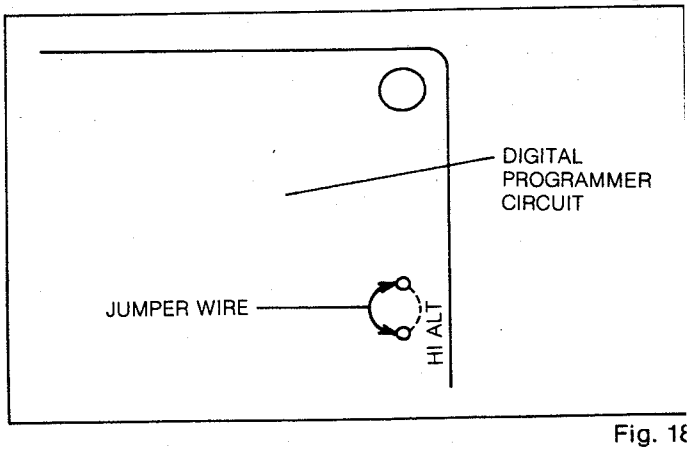


Fig. 18

PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

(A) Do not operate or allow the oven to be operated with the door open.
(B) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary :
  (1) Interlock operation
  (2) Proper door closing
  (3) Seal and sealing surfaces (arcing, wear, and other damage)
  (4) Damage to or loosening of hinges and latches.
  (5) Evidence of dropping or abuse
(C) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity and connections.
(D) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.
(E) A microwave leakage check to verify compliance with the Government performance standard should be performed on each oven prior to release to the owner.

CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING

Unlike many other appliances, the microwave oven is high-voltage, high-current equipment. Though it is free from danger in ordinary use, extreme care should be taken during repair.

CAUTION

Servicemen should remove their watches whenever working close to or replacing the magnetron.

1. Check the grounding

Do not operate on a 2-wire extension cord. The microwave oven is designed to be used when grounded. It is imperative, therefore, to make sure it is grounded properly before beginning repair work.

2. Warning about the electric charge in the high voltage capacitor

For about 30 seconds after the oven stops, an electric charge remains in the high voltage capacitor. When replacing or checking parts, short between oven chassis and the lower terminal of variable power switch by an insulated screw driver to discharge. (see **Fig. 19**)

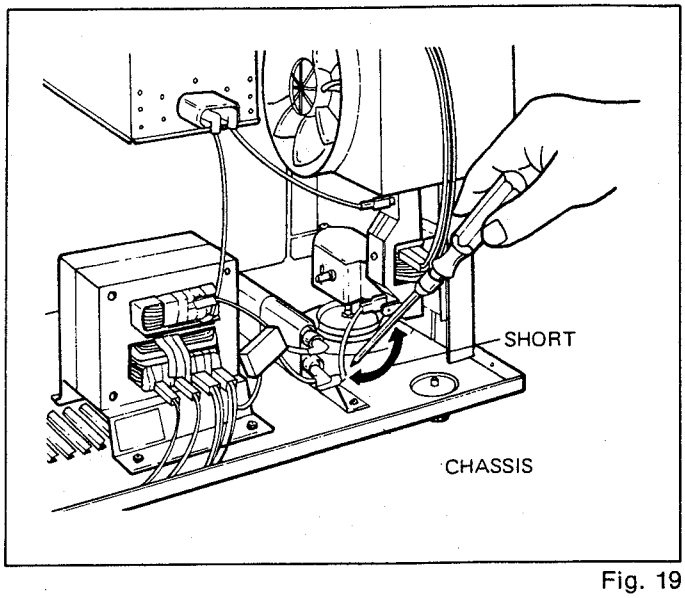


Fig. 19

WARNING

There is high-voltage present, with high-current capabilities in the circuits of the high voltage winding and filament winding of the high voltage transformer. It is extremely dangerous to work on or near these circuits with oven energized.

DO NOT measure the voltage in the high voltage circuit including filament voltage of magnetron.

WARNING

Never touch any circuit wiring with your hand nor with an insulated tool during operation.

3. When parts must be replaced, remove the power plug from the outlet.

4. When the 15 Amp fuse is blown due to the operation of short switch :

(A) Replace the latch switch A (primary), latch switch B (secondary) and short switch.....NE-9930
(B) Replace the latch switch B (primary) and short switch.....NE-9930C.
(C) This is mandatory. Refer to pages 36 for the necessary adjustments for these switches.
(D) When replacing the fuse, confirm that it has the appropriate rating for this model.

5. Avoid inserting nails, wire, etc. through any holes in the unit during operation.

Never insert a wire, nail or any other metal object through the lamp holes on the cavity or any other holes or gaps, because such objects may work as an antenna and cause microwave leakage.

6. Confirm after repair

(A) After repair or replacement of parts, make sure that the screws of the oven, etc. are neither loose nor missing.
Microwaves might leak if screws are not properly tightened.
(B) Make sure that all electrical connections are tight before inserting the plug into the wall outlet.
(C) Check for radiation leakage, (Refer to procedure for measuring radiation leakages on pages 37.

DISASSEMBLY AND PARTS REPLACEMENT PROCEDURE

1. Replacement of the magnetron

CAUTION

Servicemen should remove their watches whenever working close to or repairing the magnetron.

(A) Discharge the high voltage capacitor (see page 33)
(B) Remove air guide A by removing 2 screws holding it to the oven cavity.
Air guide A does not have to be taken out completely.
(C) Remove the 2 high voltage leads from filament terminals.
(D) Remove the 2 screws holding thermal cutout to magnetron.
(E) Remove the 4 nuts holding the magnetron.
NOTE 1: Make sure that the embossed ring is rigidly attached on the magnetron anode. (see **Fig. 20**).
NOTE 2: To prevent microwave leakage, tighten the mounting nuts properly making sure there is no gap between the waveguide and the magnetron.

CAUTION

When connecting 2 filament lead wires to the magnetron terminals, be sure to connect the lead wires in the correct position.
Namely, the lead wire of high voltage transformer should be connected to "F terminal" and the lead wire with protector from variable power switch should be connected to "FA terminal." (Refer to WIRING DIAGRAM on pages 27 and 28)

2. Replacement of the fan motor and turntable fan motor. (see Fig. 21 and 22)

(A) Disconnect 2-pin connectors of fan motor and turntable motor.
(B) Remove belts A and B.
(C) Remove variable power switch.
(D) Remove 8 screws holding fan motor bracket.

WHEN REPLACING FAN MOTOR

(E) Remove fan blade by removing nut
NOTE: This nut is counter clockwise type.
(F) Remove metal ground strap by removing screw.
(G) Remove fan motor by removing 3 screws and cushion rubbers.

WHEN REPLACING TURNTABLE MOTOR

(H) Remove pulley A by removing wire pin.
(I) Remove turntable motor by removing 3 screws and cushion rubbers.
(J) Remove metal ground strap by removing screw.

3. Replacement of the digital programmer circuit (D.P.C.). (see Fig. 23, 24 and 25)

(A) Unsolder the shielded cable at the humidity sensor end, do not unsolder at D.P.C.
NOTE: Do not allow solder to flow from the 2 center terminals (sensor element) to the guard rings when soldering or unsoldering.
(B) Disconnect 14-pin and 5-pin connectors from D.P.C.
(C) Remove 2 screws holding escutcheon base.
(D) Remove screw holding grounding wire of D.P.C.
(E) Remove 2 screws holding escutcheon base bracket to escutcheon base.
(F) Disconnect 10-pin connector of membrane switch from D.P.C.
(G) Remove the D.P.C. by removing 7 screws.

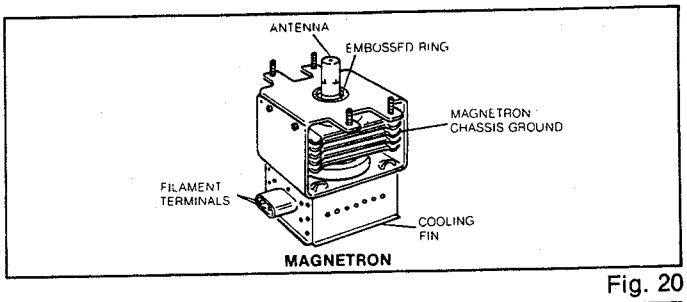


Fig. 20

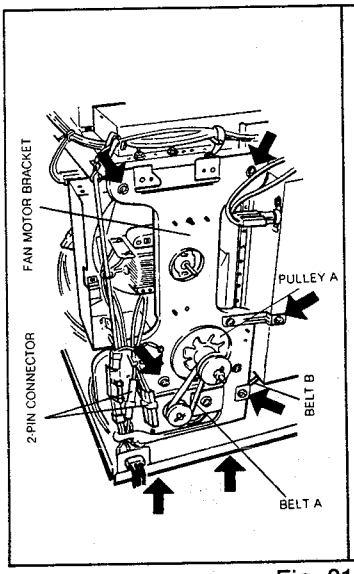


Fig. 21

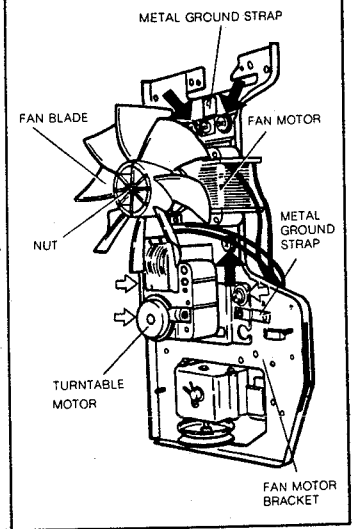


Fig. 22

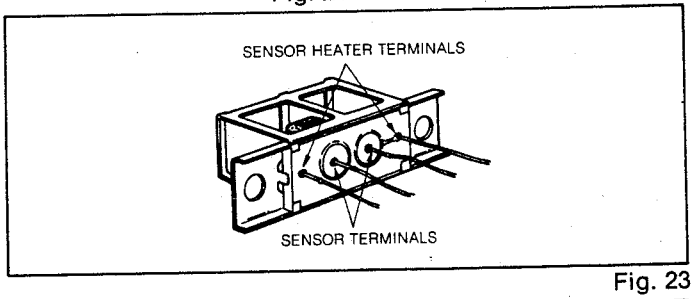


Fig. 23

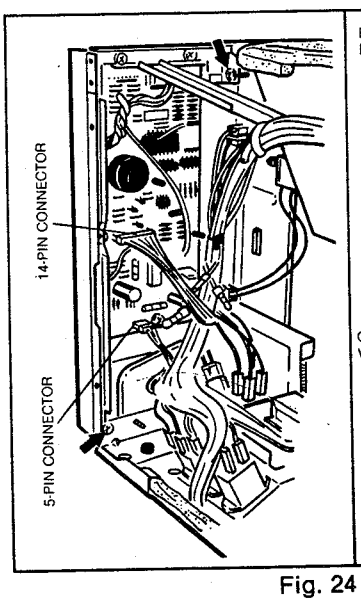


Fig. 24

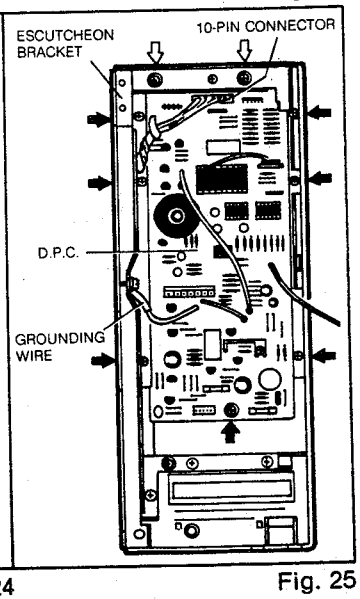


Fig. 25

4. Replacement of the heater and heater fan motor. (see Fig. 26 and 27)

(A) Disconnect 2 lead wires from oven thermal cutout.
(B) Disconnect 2 lead wires from heater fan motor.
(C) Remove oven temp sensor by removing 2 screws.
(D) Remove 2 heater lead wires by removing screws and remove insulation panel A.

NOTE: Heater terminals are very easily bent, so please hold firmly, while loosening screws.

(E) Remove 10 screws holding heater panel.
(F) Remove circulation fan blade by removing nut.

NOTE: This nut is counter clockwise type.

WHEN REPLACING HEATER

(G) Remove back panel B from back panel by removing screw.
(H) Remove the heater from back panel and heater supports.

WHEN REPLACING HEATER FAN MOTOR

(I) Remove choke metal A by removing screw.
(J) Remove back metal by removing screw.
(K) Remove 3 screws and cushion rubbers holding heater fan motor.

5. Replacement of the door assembly.

(A) Remove the 2 bolts holding the upper hinge to the oven assembly.
(B) Open the door and while pulling the door toward you, work the upper hinge out through the hole in the oven assembly. The door will be simply lifted off the bottom hinge pin at the same time.

NOTE: Do not lose spacer at the lower hinge.

(C) When mounting the door assembly to the oven assembly, be sure to adjust the door assembly parallel to the sash by moving the upper hinge and lower hinge according to the directions in **Fig. 28**.
Also adjust so that the door has no play between the inner door surface and oven frame assembly. If the door assembly is not mounted properly, microwaves may leak from the clearance betwen the door and the oven. (see **Fig. 29**)

6. Replacement of oven temp sensor

(A) Cut shielded lead wire at the top of the sleeve, and remove 2 screws to take out, then replace with new one.
(B) To connect the lead wires to sensor, use enclosed lead wire connector supplied with replacement parts of oven temp sensor. (see **Fig. 30**)

NOTE: The lead wire connector should never be soldered to the oven temp. sensor terminals.
They can only be connected by using crimping tools designed for this purpose. Heat from the oven could melt some types of solder.

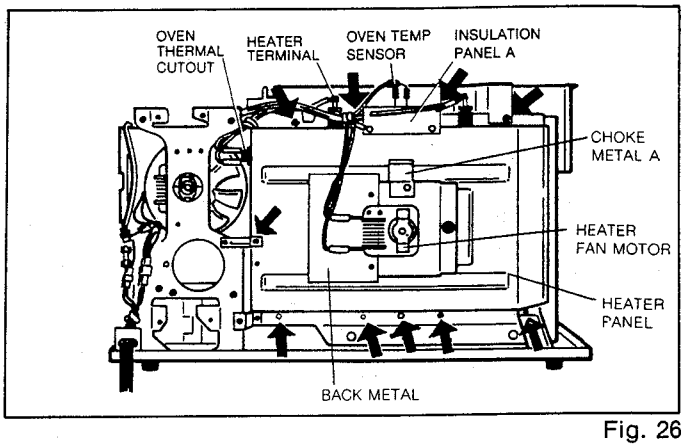


Fig. 26

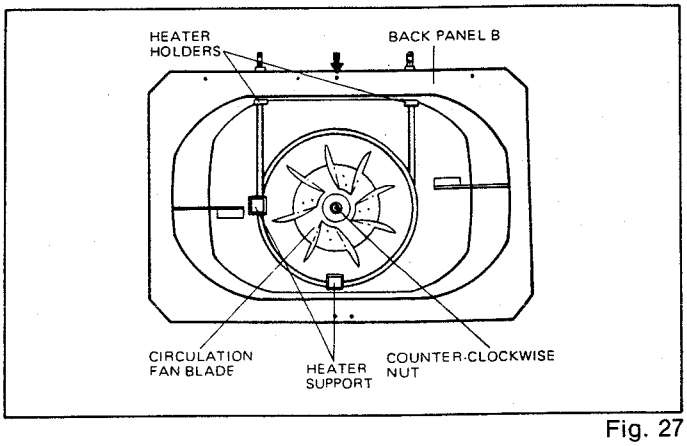


Fig. 27

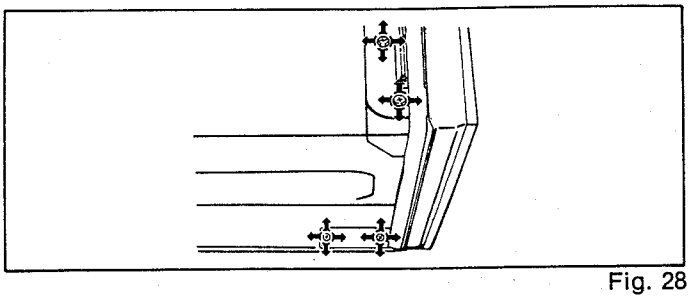


Fig. 28

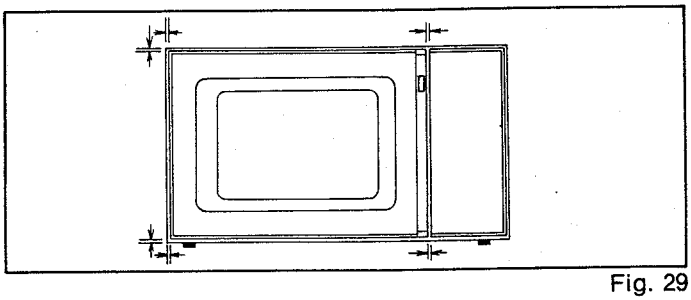


Fig. 29

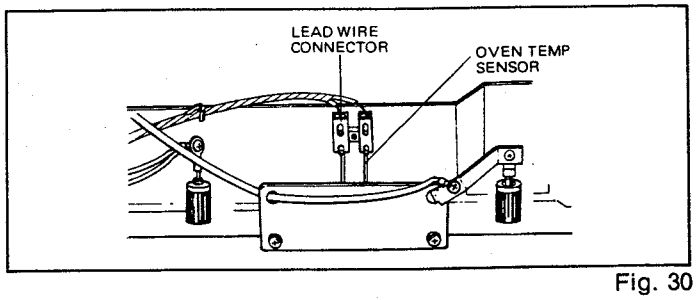


Fig. 30

MEASUREMENTS AND ADJUSTMENTS

NOTE: Please note this model has no test resistor for measuring diode or anode current. When you check the high voltage circuit, follow the procedure in the troubleshooting guide on page 38.

WARNING

For continued protection against radiation hazard, replace only with identical replacement parts (Part No. ANE6142-D60, Type No. V-15G-3C28 for latch switch A and B and Part No. ANE6158 B60AP, Type No. V-5-3C244 for short switch).

When the 15 Amp. fuse is blown due to the operation of short switch, you must replace latch switch A, latch switch B (latch switch A not needed for NE-9930C) and short switch then follow the adjustment procedures below.

1. Adjustment of latch switch A and door switch

(A) Mounting of the latch switch A and door switch to the door hook. Mount latch switch A and door switch to the door hook assembly by securing the screws as shown in **Fig. 31**.

NOTE: **No specific adjustment during installation of latch switch A and door switch to the door hook is necessary.**

(B) Installation of the door hook assembly to the oven assembly. When mounting the door hook assembly to the oven assembly, be sure to adjust the door hook assembly by moving in the arrow direction so that the oven door will not have any play in it. (see **Fig. 32**)
Check for play in the door by pulling on the door handle without pushing the handle's latch button. Make sure that the latch key positions correctly during adjustment. Also make sure that the latch key moves smoothly after adjustment is completed. Completely tighten the screws holding the door hook assembly to the oven assembly.

2. Adjustment of latch switch B, short switch and oven lamp switch

(A) Mounting of latch switch B, the short switch and oven lamp switch to the door hook assembly.
Latch switch B, short switch and oven lamp switch are installed onto the door hook assembly as shown in **Fig. 33**.

NOTE: **No specific adjustment during installation of latch switch B, the short switch and oven lamp switch to the door hook is necessary.**

(B) Installation of the door hook assembly to the oven assembly. Adjust the door hook by moving it in the direction of arrow in **Fig. 34** so that the oven door will not have any play in it. Check for play in the door by pulling on the door handle without pushing the handle's latch button. Make sure that the latch key moves smoothly after adjustment is completed. Completely tighten the screws holding the door hook assembly to the oven assembly.

3. Measurement of the magnetron's output

The power output of the magnetron can be measured by performing a simple water temperature rise test.
Equipment needed for the Test :
- Two 1 liter beakers
- One glass thermometer

NOTE : **Check the line voltage under load. Low voltage will lower the magnetron output. Make all temperature and time tests with accurate equipment.**

(A) Fill the two 1 liter beakers with water and mark one A and one B.
(B) Stir the water in each beaker with the thermometer and record each beaker's temperature:
Beaker A's temperature = T1A
Beaker B's temperature = T1B
(C) The average value (T1) of T1A and T1B is calculated as follows :

$$T1 = \frac{T1A + T1B}{2}$$

(D) Place both beakers on the center of the glass cook plate.
Set the oven for High power and set two minutes. Heat the water for exactly two minutes.
(E) When heating is finished, stir the water again with the thermometer and measure the temperature rises as T2A and T2B.
(F) The average value (T2) of T2A and T2B is calculated as follows :

$$T2 = \frac{T2A + T2B}{2}$$

(G) Subtract T1 from T2. This will give you the temperature rise.
(H) The normal temperature rise for this model is 16° to 20°F (8.9 to 11°C) at the "High" power selection.
- If no temperature rise is noted, refer to the "TROUBLESHOOTING GUIDE"

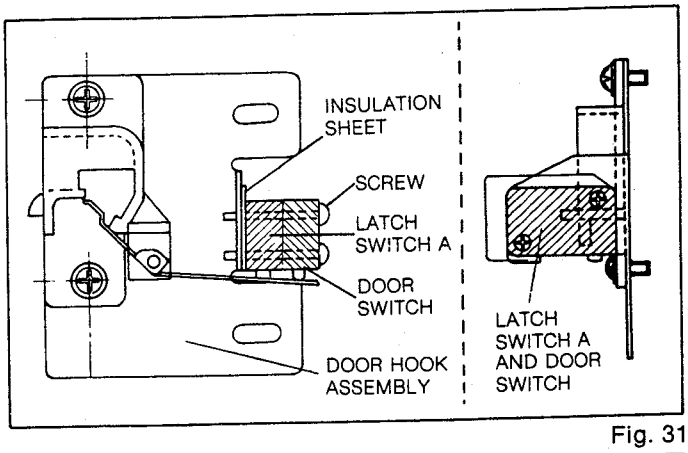


Fig. 31

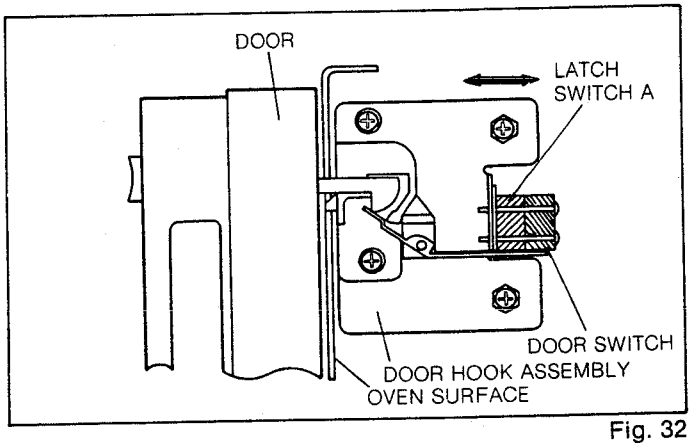


Fig. 32

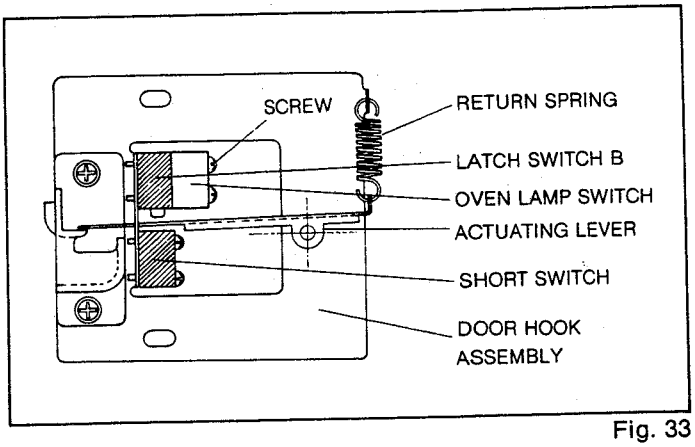


Fig. 33

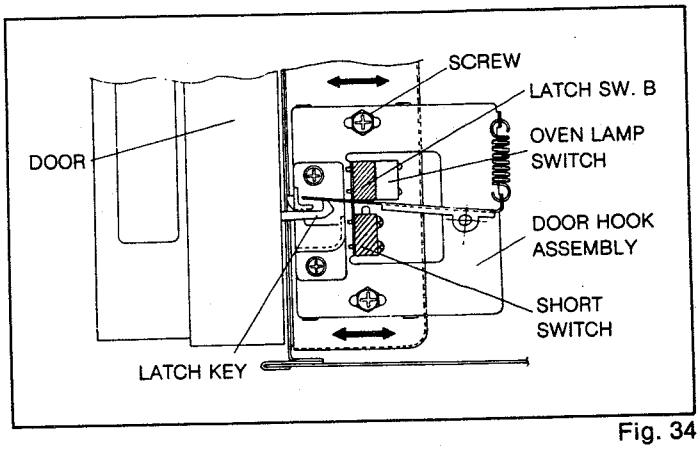


Fig. 34

PROCEDURE FOR MEASURING RADIATION LEAKAGE

WARNING

Check for radiation leakage after every servicing. Should the leakage be more than 2 mW/cm² (1 mW/cm² for Canada) inform the Panasonic Co. (MECA, PHI, PSC, or MELCA) immediately. After repairing or replacing any radiation safety device, keep a written record for future reference, as required by D.H.H.S and NHW regulation. This requirement must be strictly observed. In addition the leakage reading must be recorded on the service repair ticket while in the customer's home.

NOTE: The U.S. government standard is 5 mW/cm² while in the customer's home. 2 mW/cm² stated here is Panasonic's own voluntary standard.

1. Equipment

- •Electromagnetic radiation monitor
- •Glass thermometer 100°C or 212°F
- •600cc glass beaker

2. Procedure for measuring radiation leakage.

Note before measuring

(1) Do not exceed meter full scale deflection. Leakage monitor should initially be set to the highest scale.

(2) To prevent false readings the test probe should be held by the grip portion of the handle only and moved along the shaded area shown in **Fig. 36** *no faster than 1 inch/sec (2.5 cm/sec)*

(3) Leakage with the outer panel removed.....less than 5 mW/cm²

(4) Leakage for a fully assembled oven with door normally closed.....less than 2 mW/cm² (1 mW/cm² for Canada)

(5) Leakage for a fully assembled oven [Before the latch switch (primary) is interrupted] while pulling on the door handle.....less than 2 mW/cm²

(A) Pour 275 ± 15cc (9ozs ± 1/2oz) of 20 ± 5°C (68 ± 9°F) (50 cc for Canada) water in a beaker which is graduated to 600cc, and place the beaker in the center of the oven.

(B) Set the radiation monitor to 2450MHz and use it following the manufacturer's recommended test procedure to assure correct results.

(C) When measuring the leakage, always use the 2 inch (5 cm) spacer supplied with the probe.

(D) Press the start button and with the magnetron oscillating, measure the leakage by holding the probe perpendicular to the surface being measured.

(1) Measurement with the outer panel removed.

Whenever you replace the magnetron, measure for radiation leakage before the outer panel is installed and after all necessary components are replaced or adjusted.

Special care should be taken in measuring around the magnetron. (see **Fig. 35**)

WARNING

Avoid contacting any high voltage parts.

(2) Measurements with a fully assembled oven.

After all components, including the outer panel, are fully assembled, measure for radiation leakage around the door periphery, the door viewing window, the exhaust opening and air inlet openings.

3. Record keeping and notification after measurement

(A) After any adjustment or repair to a microwave oven a leakage reading must be taken. Record this leakage reading on the repair ticket even if it is zero.

A copy of this repair ticket and the microwave leakage reading should be kept by repair facility.

(B) Should the radiation leakage be more than 2 mW/cm² (1 mW/cm² for Canada) after determining that all parts are in good condition, functioning properly, and genuine replacement parts as listed in this manual have been used, immediately notify the PANASONIC CO. (MECA, PHI, PSC or MELCA).

4. At least once a year, have the radiation monitor checked for calibration by its manufacturer.

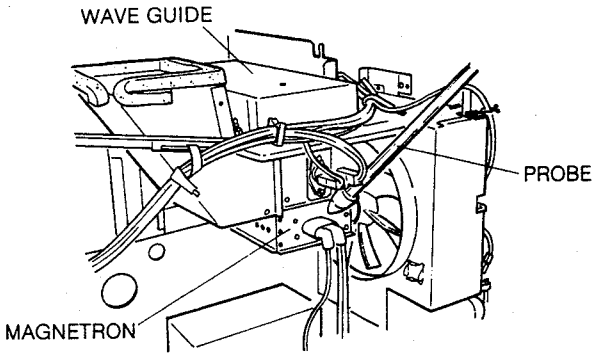
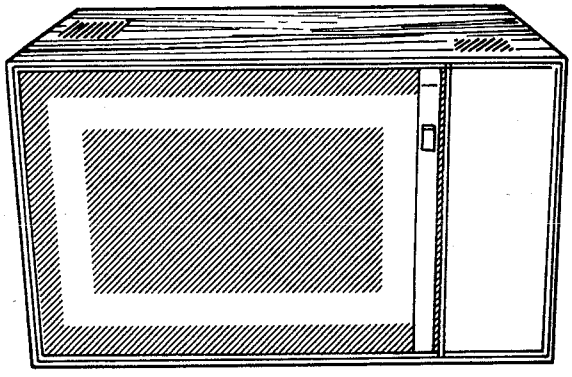
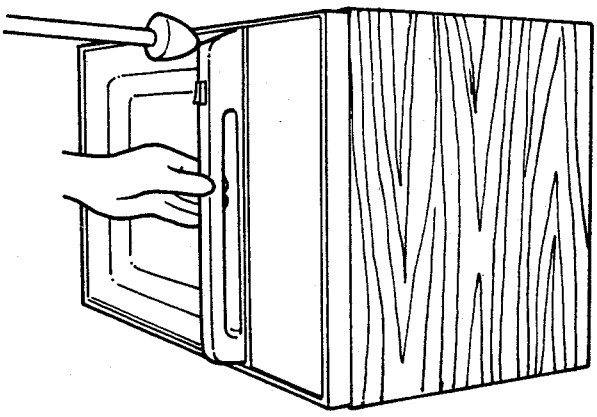


Fig. 35



Move probe along shaded area (▨)

Fig. 36



Before latch switch interruption

Fig. 37

TROUBLESHOOTING GUIDE

CAUTION

1. Check grounding before checking for trouble.
2. Be careful of the high voltage circuit.
3. Discharge the high voltage capacitor. (See page 33)
4. When checking the continuity of the switches or of the high voltage transformer, disconnect one lead wire from these parts and then check continuity with the AC plug removed. To do otherwise may result in a false reading or damage to your meter.
5. Do not touch any part of the circuitry on the digital programmer circuit since static electric discharge may damage this control panel.
   Always touch yourself to ground while working on this panel to discharge any static charge built up in your body.

First of all operate the microwave oven following the correct operating procedures described on pages 3 — 24 in order to find exact cause of any trouble.

[TROUBLE 1] The following visual conditions indicate a probable defective digital programmer circuit (D.P.C.) or membrane switch assembly.

A . 1. Incomplete segments.
   A. Segments missing.
   B. Partial segments missing.
   C. Digit flickering other than normal fluorescent slight flickering.
   D. Colon does not turn on or does not blink when the clock set button is pressed.
2. A distinct change in the brightness of one or more numbers in the display.
3. One or more digits in the display not on when they should be.
4. Wrong or no power indicator light for power level selected.
5. Display indicates a number different from one touched.
   For example, touch 5 and 3 appears in the display. (Refer to B)
6. Specific numbers (for example 2 or 3) will not display.
7. Display does not count down with time cooking or when using display as a timer.
8. Display does not count up with clock operation.
9. Oven is programmable and cooks normally but no display shows.
10. Display obviously jumps in time while counting down or up.
11. Display counts down noticeably too fast while cooking.
12. Display can not shift from the first stage cooking to the second stage cooking while 2-phase cooking.
13. Display does not stop counting down with time cooking even when stop pad is tapped.
14. TOD does not reappear when cooking is finished.

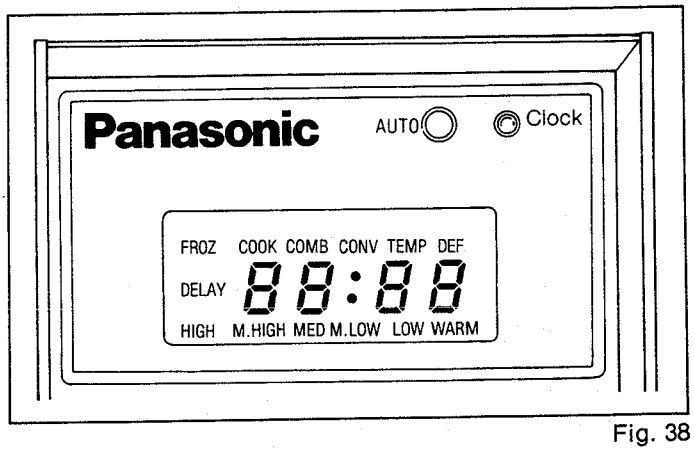


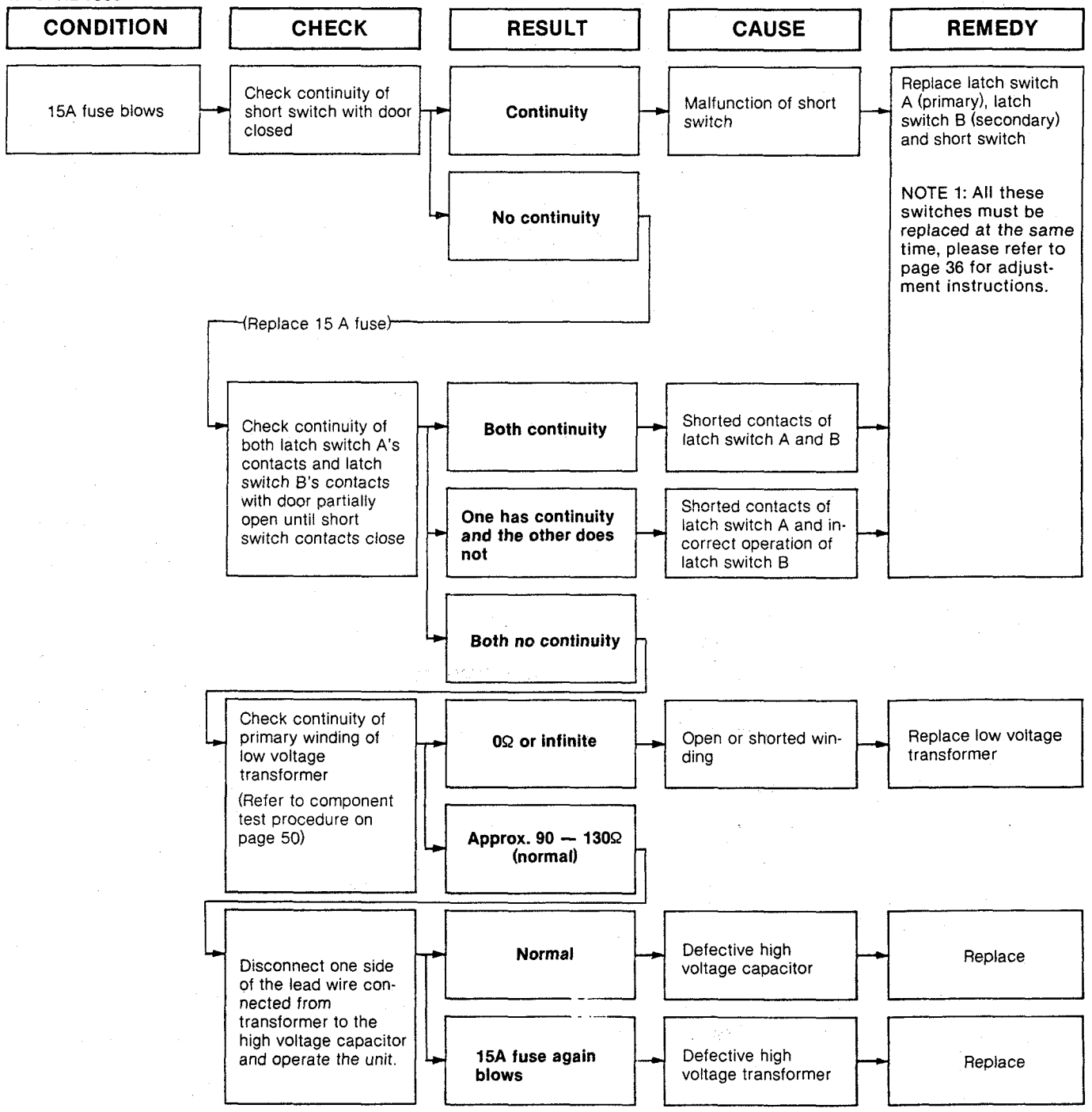
Fig. 38

B.

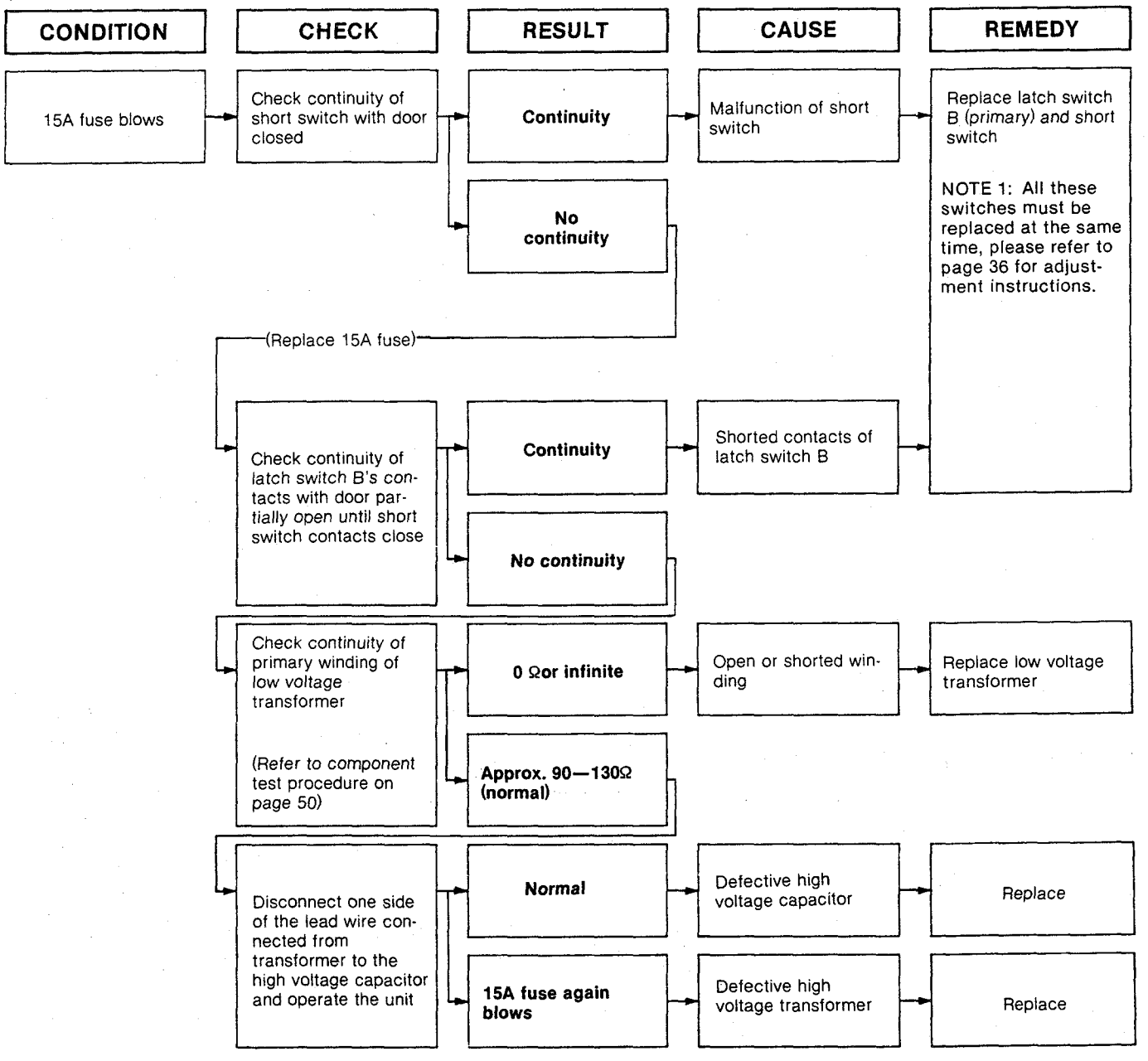
	CONDITION	CHECK	RESULT	CAUSE	REMEDY
1.	No input can be programmed	Unplug 10 pin connector from DPC and press clock set button. (see Fig. 25 on page 34)	**Clock set can be programmed.**	Defective membrane switch assembly	Replace membrane switch assembly
2.	Clock set cannot be programmed at all		**Clock set cannot be programmed**	Defective DPC.	Replace DPC.
3.	Some inputs cannot be programmed	Replace membrane switch assembly and check if it works now?	**Everything works as specified.**	Defective membrane switch assembly	Replace membrane switch assembly
4.	Display indicates a number or figure different from one touched		**Still have trouble**	Defective DPC.	Replace DPC.
5.	Random programming when pressing other than touch pads or without pressing any at all (intermittently)				

[TROUBLE 2] Oven does not operate at all ; Display window does not display any figures and any inputs can not be accepted.

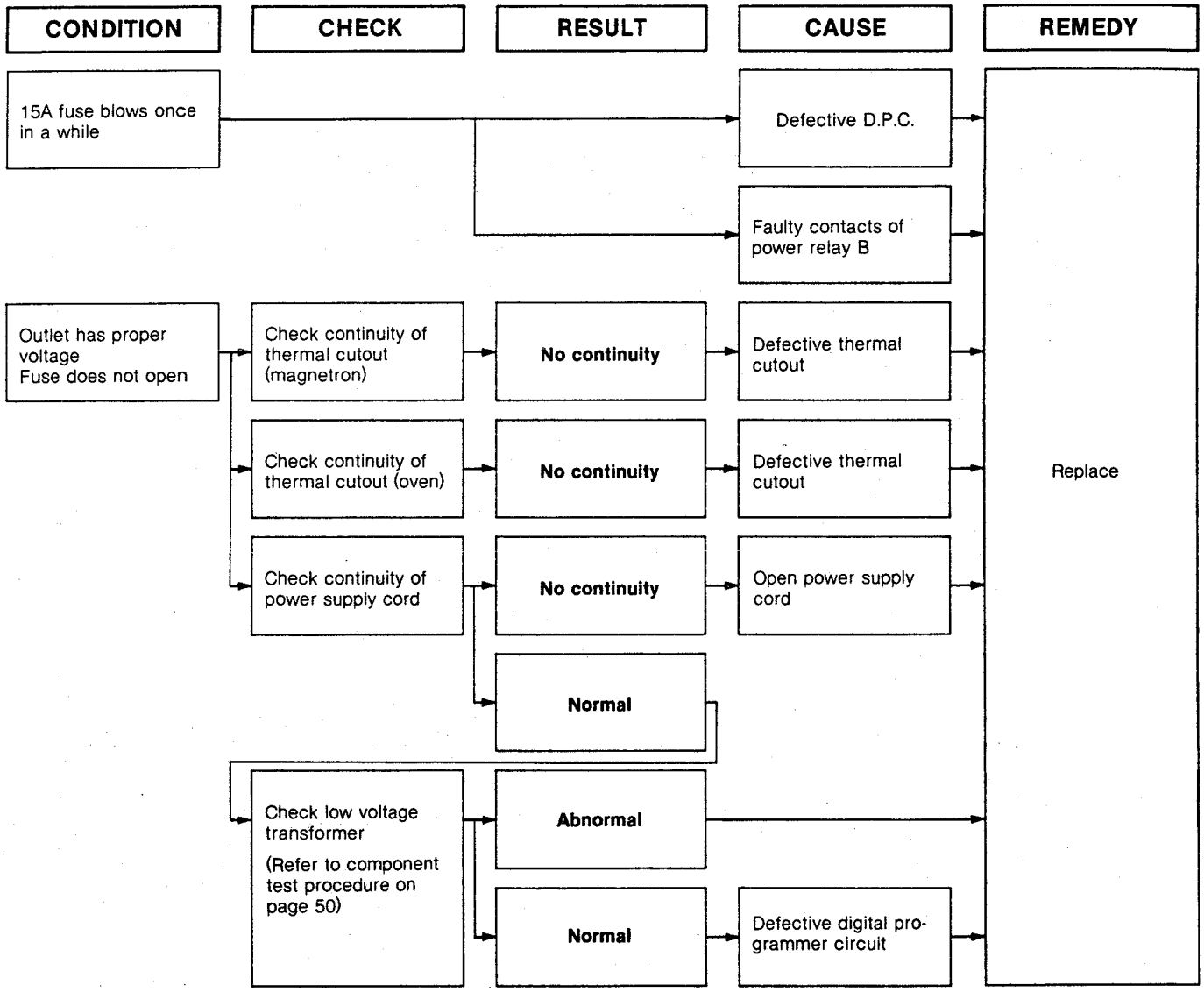
1. For NE-9930


CONDITION
CHECK
RESULT
CAUSE
REMEDY
15A fuse blows
Check continuity of short switch with door closed
Continuity
Malfunction of short switch
Replace latch switch A (primary), latch switch B (secondary) and short switch
NOTE 1: All these switches must be replaced at the same time, please refer to page 36 for adjustment instructions.
No continuity
(Replace 15 A fuse)
Check continuity of both latch switch A's contacts and latch switch B's contacts with door partially open until short switch contacts close
Both continuity
Shorted contacts of latch switch A and B
One has continuity and the other does not
Shorted contacts of latch switch A and incorrect operation of latch switch B
Both no continuity
Check continuity of primary winding of low voltage transformer
(Refer to component test procedure on page 50)
0Ω or infinite
Open or shorted winding
Replace low voltage transformer
Approx. 90 — 130Ω (normal)
Disconnect one side of the lead wire connected from transformer to the high voltage capacitor and operate the unit.
Normal
Defective high voltage capacitor
Replace
15A fuse again blows
Defective high voltage transformer
Replace

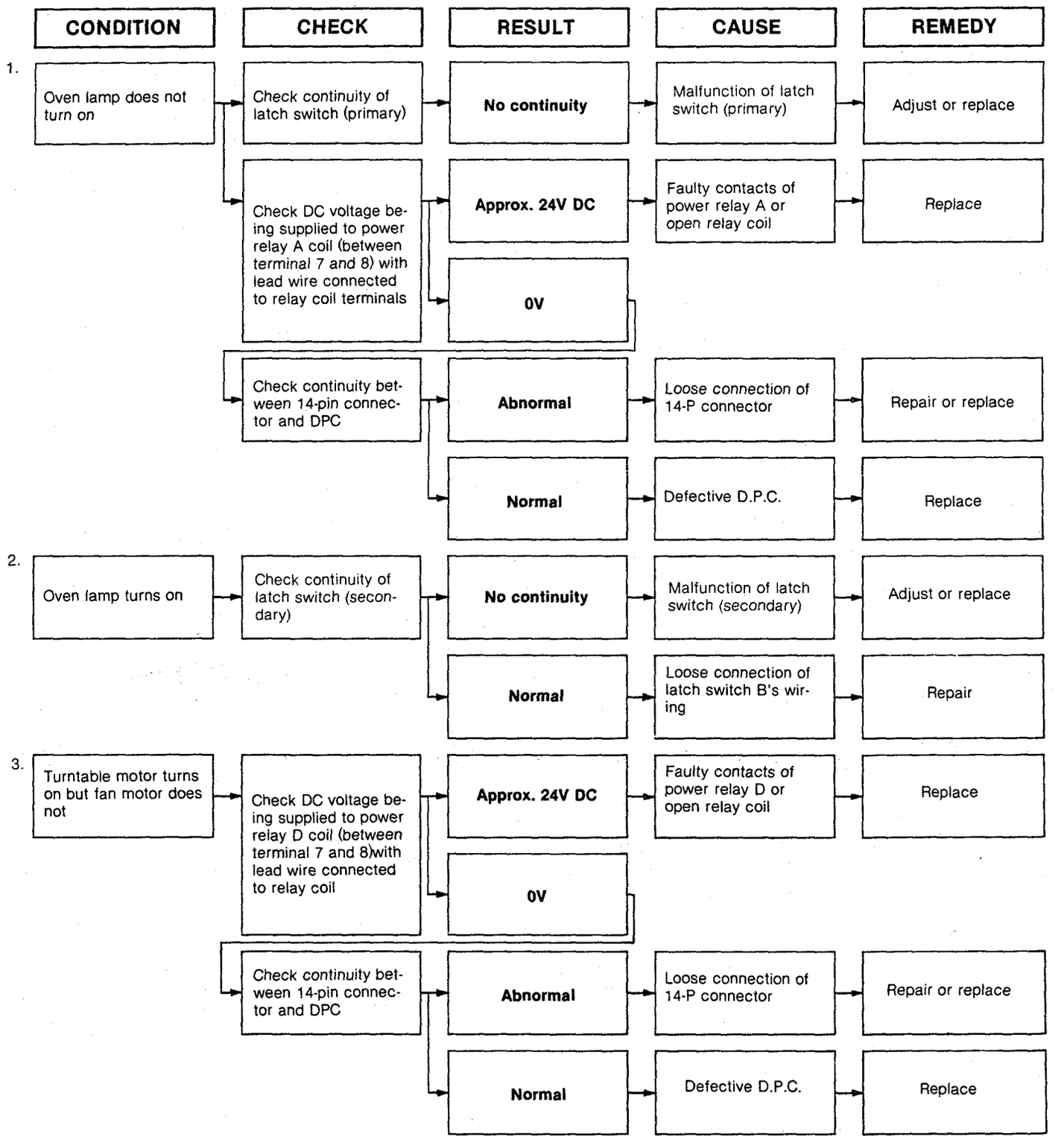
1" For NE-9930C

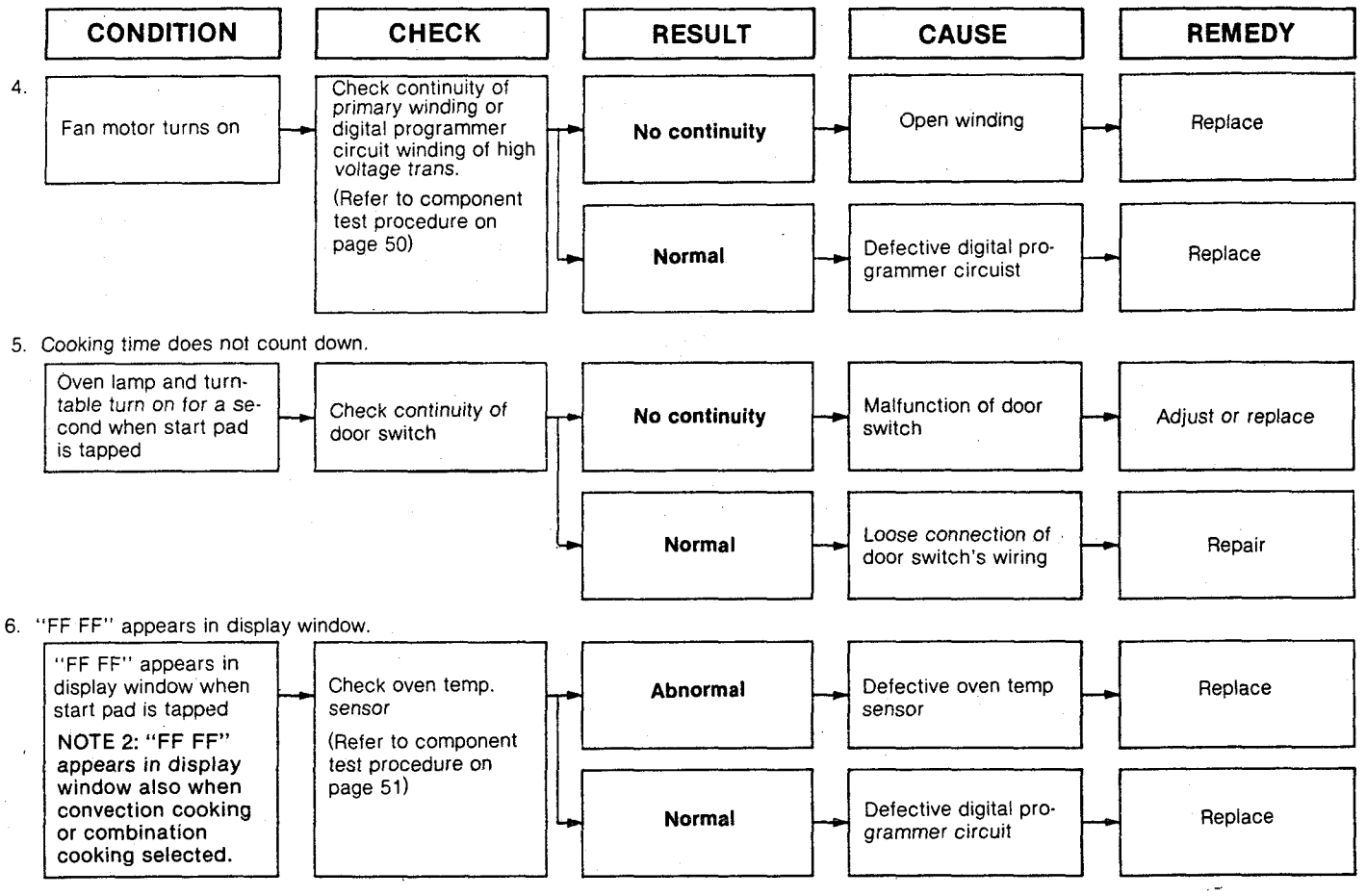

CONDITION
CHECK
RESULT
CAUSE
REMEDY
15A fuse blows
Check continuity of short switch with door closed
Continuity
Malfunction of short switch
Replace latch switch B (primary) and short switch
NOTE 1: All these switches must be replaced at the same time, please refer to page 36 for adjustment instructions.
No continuity
(Replace 15A fuse)
Check continuity of latch switch B's contacts with door partially open until short switch contacts close
Continuity
Shorted contacts of latch switch B
No continuity
Check continuity of primary winding of low voltage transformer
(Refer to component test procedure on page 50)
0 Ωor infinite
Open or shorted winding
Replace low voltage transformer
Approx. 90—130Ω (normal)
Disconnect one side of the lead wire connected from transformer to the high voltage capacitor and operate the unit
Normal
Defective high voltage capacitor
Replace
15A fuse again blows
Defective high voltage transformer
Replace

2. After replacing the fuse or turning on the home circuit breaker, the oven works for a while then the fuse or circuit breaker opens again. This may be caused by both the heater and microwave oscillation working at the same time, this will cause the unit to draw too much current.

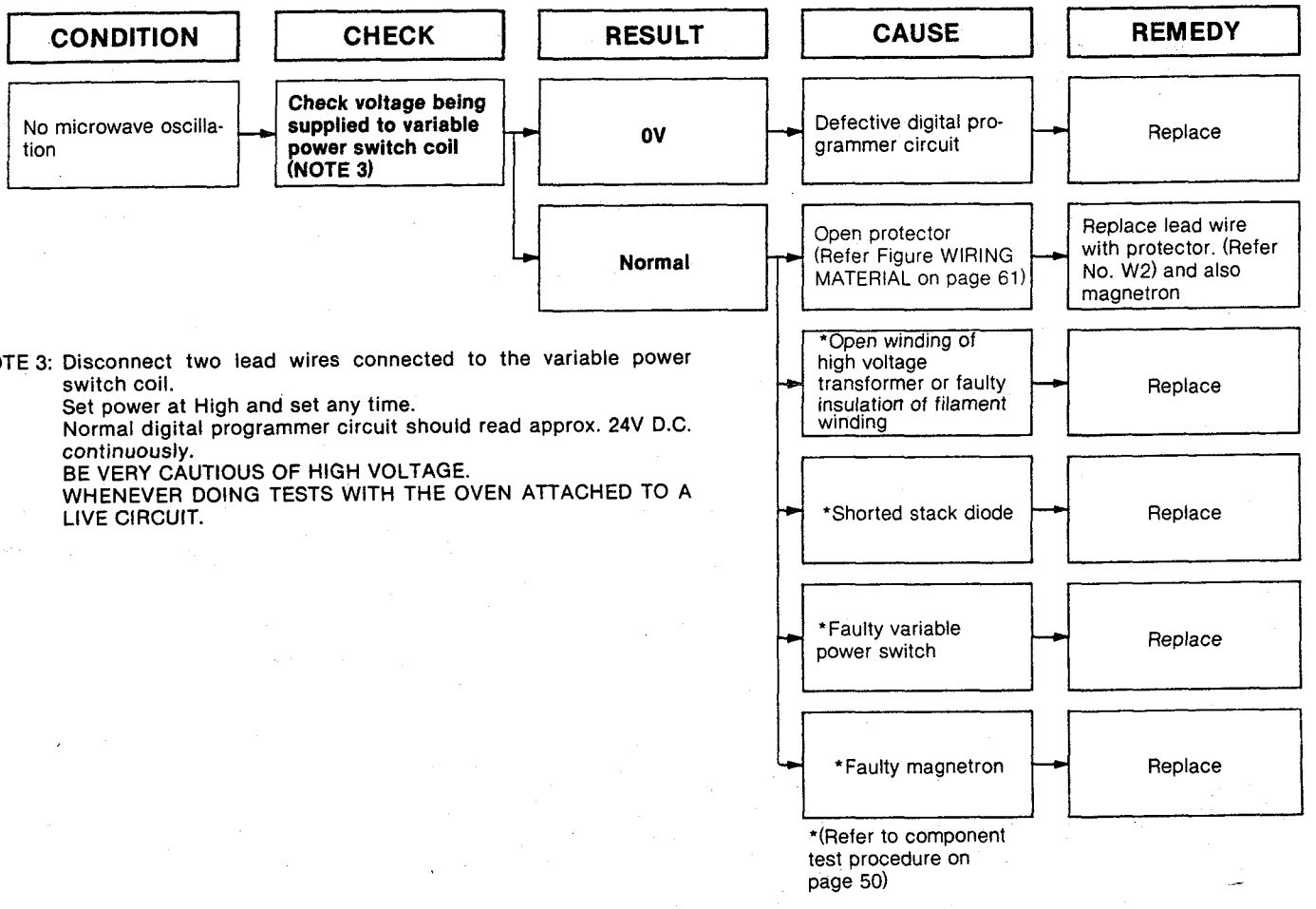


[TROUBLE 3] Display shows all figures selected, but oven does not start cooking even though desired program and time are set and start pad is tapped. (Cooking time counts down.)


CONDITION
CHECK
RESULT
CAUSE
REMEDY
1.
Oven lamp does not turn on
Check continuity of latch switch (primary)
No continuity
Malfunction of latch switch (primary)
Adjust or replace
Check DC voltage being supplied to power relay A coil (between terminal 7 and 8) with lead wire connected to relay coil terminals
Approx. 24V DC
Faulty contacts of power relay A or open relay coil
Replace
0V
Check continuity between 14-pin connector and DPC
Abnormal
Loose connection of 14-P connector
Repair or replace
Normal
Defective D.P.C.
Replace
2.
Oven lamp turns on
Check continuity of latch switch (secondary)
No continuity
Malfunction of latch switch (secondary)
Adjust or replace
Normal
Loose connection of latch switch B's wiring
Repair
3.
Turntable motor turns on but fan motor does not
Check DC voltage being supplied to power relay D coil (between terminal 7 and 8)with lead wire connected to relay coil
Approx. 24V DC
Faulty contacts of power relay D or open relay coil
Replace
0V
Check continuity between 14-pin connector and DPC
Abnormal
Loose connection of 14-P connector
Repair or replace
Normal
Defective D.P.C.
Replace

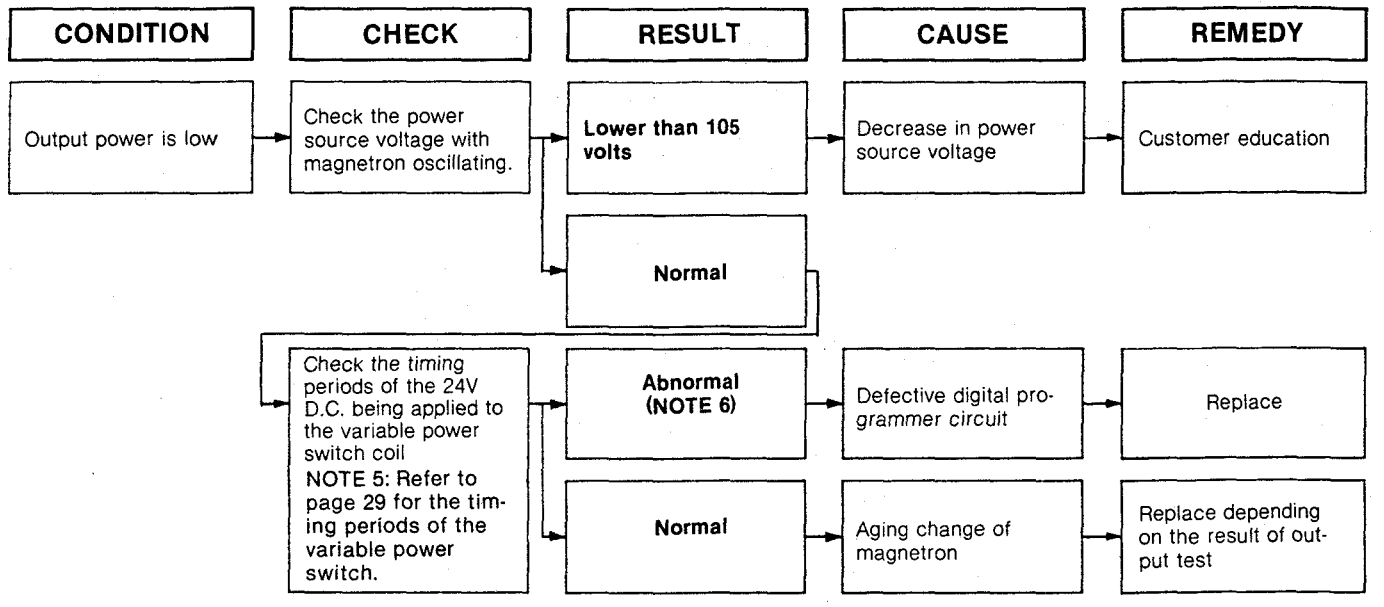

CONDITION
CHECK
RESULT
CAUSE
REMEDY
4.
Fan motor turns on
Check continuity of primary winding or digital programmer circuit winding of high voltage trans.
(Refer to component test procedure on page 50)
No continuity
Open winding
Replace
Normal
Defective digital programmer circuist
Replace
5. Cooking time does not count down.
Oven lamp and turntable turn on for a second when start pad is tapped
Check continuity of door switch
No continuity
Malfunction of door switch
Adjust or replace
Normal
Loose connection of door switch's wiring
Repair
6. "FF FF" appears in display window.
"FF FF" appears in display window when start pad is tapped
NOTE 2: "FF FF" appears in display window also when convection cooking or combination cooking selected.
Check oven temp. sensor
(Refer to component test procedure on page 51)
Abnormal
Defective oven temp sensor
Replace
Normal
Defective digital programmer circuit
Replace

[TROUBLE 4] No microwave oscillation even though fan motor rotates.



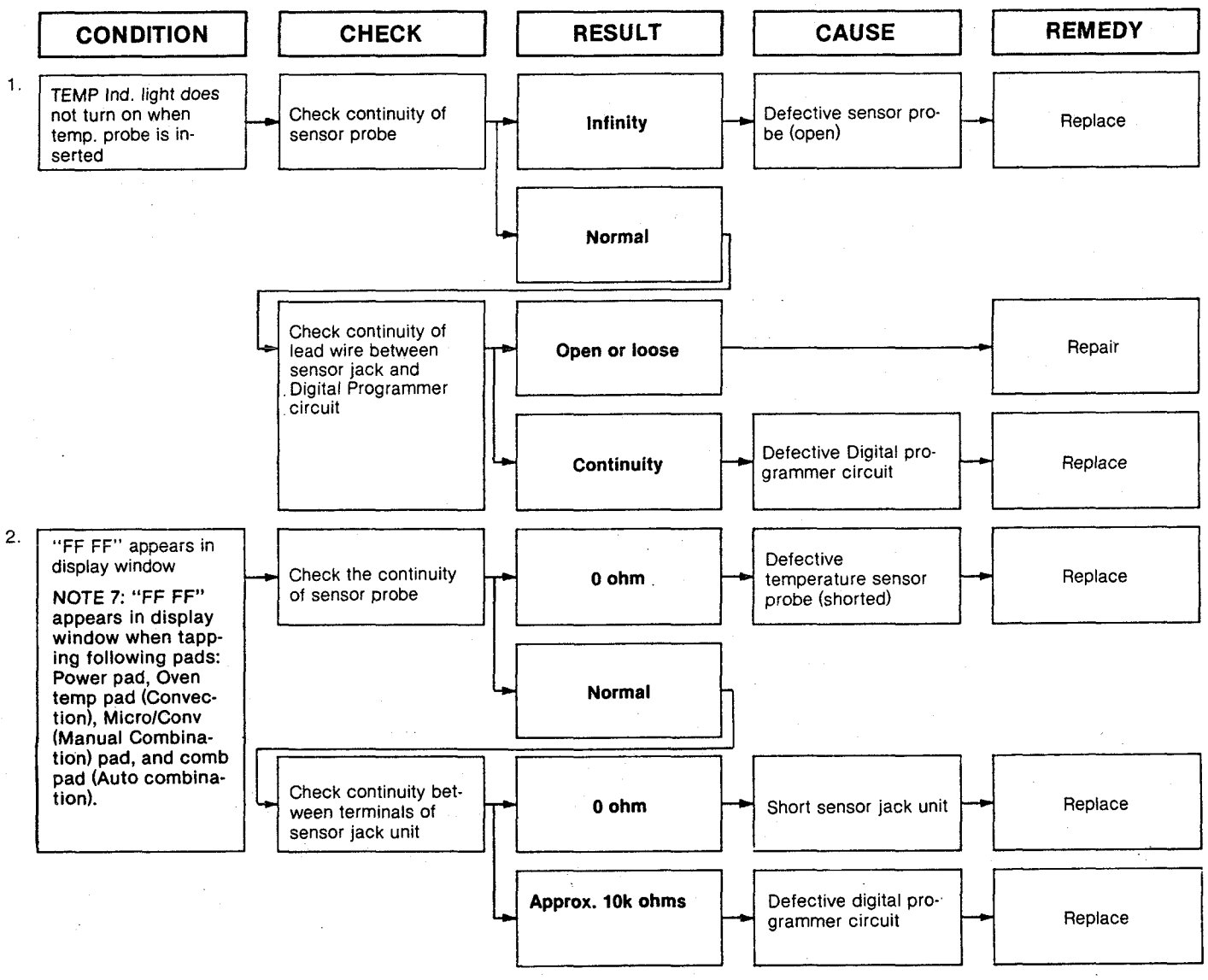
NOTE 3: Disconnect two lead wires connected to the variable power switch coil.
Set power at High and set any time.
Normal digital programmer circuit should read approx. 24V D.C. continuously.
BE VERY CAUTIOUS OF HIGH VOLTAGE.
WHENEVER DOING TESTS WITH THE OVEN ATTACHED TO A LIVE CIRCUIT.

[TROUBLE 5] Microwave Output power is low.
First of all, check if output power is really low following "measurement of magnetron's output" on page 36.

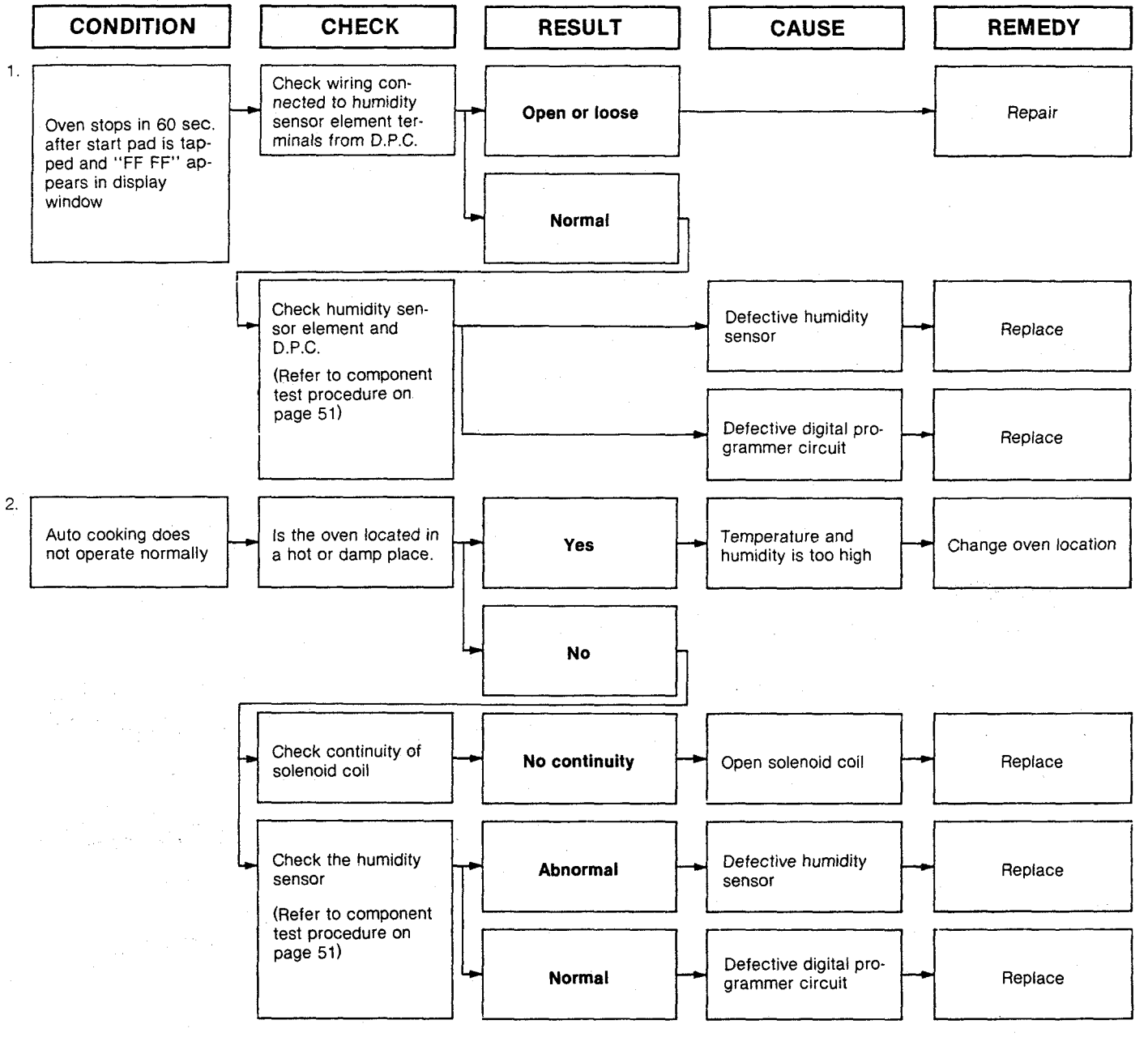

CONDITION
CHECK
RESULT
CAUSE
REMEDY
Output power is low
Check the power source voltage with magnetron oscillating.
Lower than 105 volts
Decrease in power source voltage
Customer education
Normal
Check the timing periods of the 24V D.C. being applied to the variable power switch coil
NOTE 5: Refer to page 29 for the timing periods of the variable power switch.
Abnormal (NOTE 6)
Defective digital programmer circuit
Replace
Normal
Aging change of magnetron
Replace depending on the result of output test

NOTE 6: If variable power switch is always energized, in other words the microwave oven always operates at "High" power, even if the selected program is other than high, it will cause the fuse to blow. This is similar to TROUBLE 2 — 2 on page 41.

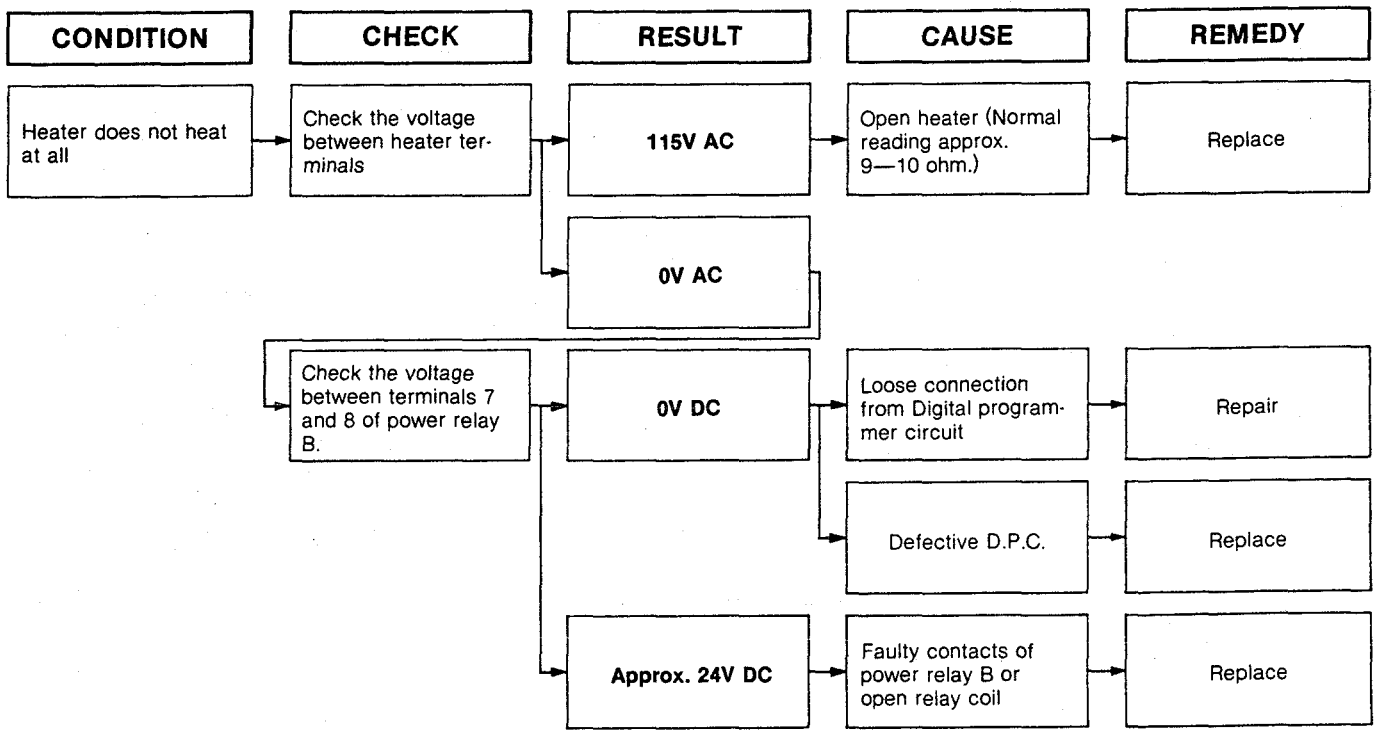
[TROUBLE 6] Microwave oven does not operate normally when using temperature probe.



[TROUBLE 7] Microwave oven does not operate normally, only when auto sensor cooking is selected.



[TROUBLE 8] Microwave program works normally, but convection program does not.



[TROUBLE 9] Heater turns on even while in a microwave cooking mode.
In this case, this trouble should also be causing the fuse and/or home circuit breaker to open.

CONDITION	CHECK	RESULT	CAUSE	REMEDY
Heater turns on while microwave cooking			Defective DPC	Replace
			Faulty contacts of power relay B	Replace

[TROUBLE 10] Combination cooking is not working in correct order.

The following chart shows the timing period of variable power switch (microwave oscillation) and power relay B (Heater) for combination program.

If the timing period is other than specified, it may be caused by a faulty power relay B or D.P.C.

1. When oven temperature is lower than programmed.

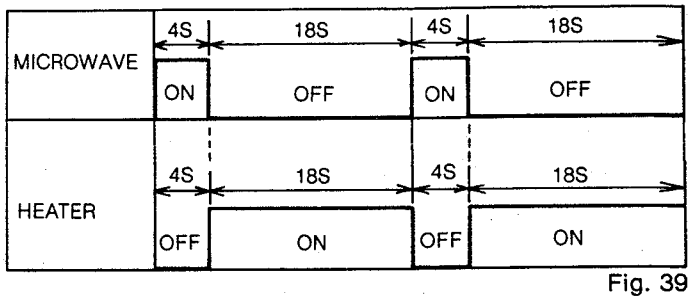


Fig. 39

2. When oven temperature is higher than programmed.

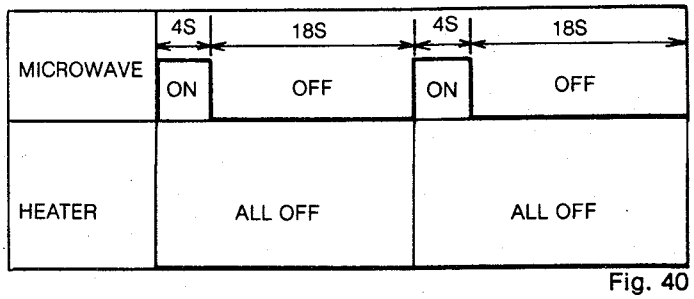


Fig. 40

COMPONENT TEST PROCEDURE

CAUTION

1. High voltage is present at the high voltage terminal of the high voltage transformer during any cook cycle.
2. It is neither necessary nor advisable to attempt measurement of the high voltage.
3. Before touching any oven components, or wiring, always unplug the oven from its power source and discharge the capacitor. (See page 33)

1. High voltage transformer (see Fig. 41)

(A) Remove connections from the transformer terminals and check continuity.
(B) Normal readings should be as follows:

Secondary winding	Approx. 50Ω—100Ω
Filament winding	Approx. 0Ω
Primary winding	Approx. 0Ω
Fourth winding	Approx. 0Ω

2. High voltage capacitor

(A) Check continuity of capacitor with meter on highest OHM scale.
(B) A normal capacitor will show continuity for a short time, and then indicate 9MΩ once the capacitor is charged.
(C) A shorted capacitor will show continuous continuity.
(D) An open capacitor will show constant 9MΩ.
(E) Resistance between each terminal and chassis should be infinite.

3. Diode

The diode is located on the base near the transformer.
(A) Isolate the diode from the circuit by disconnecting the leads.
(B) With the ohmmeter set on the highest resistance scale, measure the resistance across the diode terminals. Reverse the meter leads and again observe the resistance reading. Meter with 6V, 9V or higher voltage batteries should be used to check the front-to-back resistance of the diode, otherwise an infinite resistance may be read in both directions.
A normal diode's resistance will be infinite in one direction and several hundred KΩ in the other direction.

4. Magnetron (see Fig. 42)

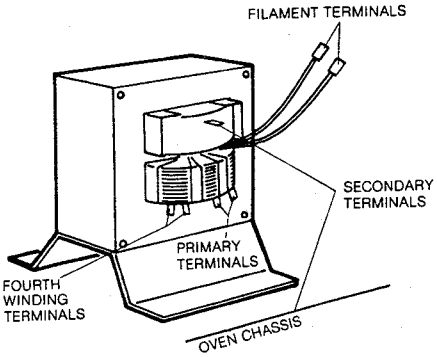
Continuity checks can only indicate an open filament or a shorted magnetron. To diagnose for an open filament or shorted magnetron.
(A) Isolate magnetron from the circuit by disconnecting the leads.
(B) A continuity check across magnetron filament terminals should indicate one ohm or less.
(C) A continuity check between each filament terminal and magnetron case should read open.

5. Variable power switch (see Fig. 43)

(A) Isolate the variable power switch from the circuit by disconnecting all leads and check continuity.
(B) A continuity check across the switch coil should be about 200ohms.
(C) A continuity check between switch terminals should read open.
(D) A continuity check between each switch terminal and ground should read open.
(E) In order to check if the contacts of the variable power switch are operating normally, do the following test procedure.
1) Be sure to isolate variable power switch from the high voltage circuit by disconnecting all leads except two leads connected to coil terminals from D.P.C.
2) Now select a power other than "High" and start the oven.
BE VERY CAUTIOUS OF THE HIGH VOLTAGE.
3) Check the continuity between both switch terminals.
4) Variable power switch contacts are working properly if the ohm meter reads open or 0 ohm when click is heard.

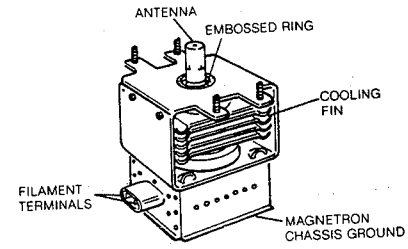
6. Low voltage transformer (see Fig. 44)

Check the voltage of primary and secondary winding of the low voltage transformer (L.V.T.).
The normal voltages of L.V.T. with no load should read as shown in **Fig. 45**.
When measuring the voltage of L.V.T. measure the voltage between each pin of the plastic connector with the connector unplugged.



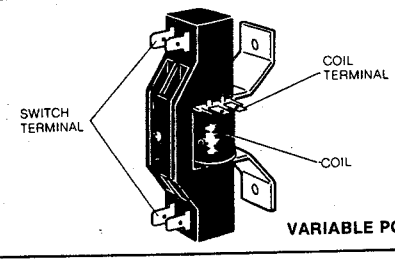
HIGH VOLTAGE TRANSFORMER

Fig. 41



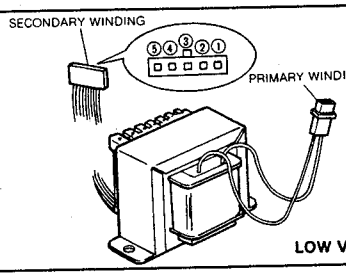
MAGNETRON

Fig. 42



VARIABLE POWER SWITCH

Fig. 43



LOW VOLTAGE TRANSFORMER

Fig. 44

Primary voltage.....115V AC

Secondary Winding	Secondary Voltage
1 Red — 2 Yellow	24.7V ± 10%
2 Yellow — 3 White	24.8V ± 10%
4 Blue — 5 Blue	3.0V ± 10%

Fig. 45

7. Humidity sensor and digital programmer circuit

CAUTION

Do not touch any part of the circuitry on the digital programmer circuit since static electric discharge may damage this control panel.
Always ground yourself while working on this panel to discharge any static charge built up in your body.

(A) Check across the sensor heater terminals. Normal cold resistance should read about 6 ohm. (see **Fig. 46**)

(B) In order to make sure the auto sensor function of the digital programmer circuit is in working order or not, do the following test procedure.
1) Place a water load in the oven.
2) Unsolder the two inner lead wires connected to the sensor terminals.
3) Tap Auto Sensor Control Pad "Cook" once to set auto sensor cooking at A1. Auto Sensor Status Indicator Light turns on and A1 appears in the display window.
4) Tap Start pad to start auto sensor cooking. The indicator light starts blinking. One blink equals one second.
5) About 10 seconds after Start pad is touched, short the disconnected lead wires for 5 seconds and then open. You can count 10 seconds by 10 blinks of the indicator light. Before shorting the lead wires you can watch the sensor heater glow red.
6) The oven lamp will dim a little, about 50 seconds after the Start-pad is touched. This indicates that the magnetron has started oscillation.
7) 10 seconds after magnetron oscillation, short the disconnected lead wires again. Auto sensor cooking A1 stops automatically when lead wires are shorted.

The auto sensor function in the digital programmer circuit is in working order if above condition is obtained.

8. To test the sensor probe's thermistor (see Fig. 47)

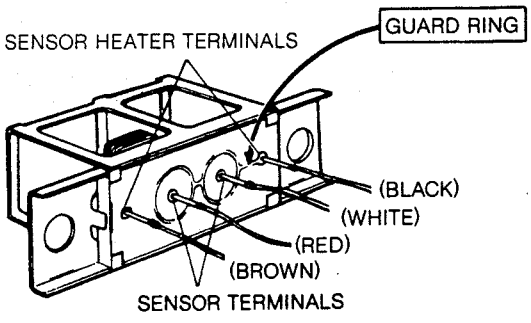
Fill a container partially with lukewarm water and place a thermometer in it. Then take the sensor probe out of the oven and place it in the container next to the thermometer so they both will sense the exact same temperature. Now take another container with boiling hot water and gradually pour this into the first container to achieve graduated temperature steps. At each temperature step listed in the above chart, you should read the corresponding resistance with an ohmmeter. If not, the probe is defective and must be replaced.

9. To test the oven temp sensor thermistor

This sensor monitors the heat produced by the heater circuit and maintains the oven temperature the user had selected. Normal room temperature, especially in a kitchen can vary anywhere from 50°F to 90°F. The reading across the oven sensor thermistor should be within 360K ohm to 800K ohm when read in an area within the 50°F to 90°F room temperature range.
If the resistance reading is out of the range stated here, the sensor is defective and must be replaced.

NOTE 1: **When measuring resistance disconnect the 14 pin connector (CN2) from the DPC otherwise a false reading may be indicated.**

NOTE 2: **If checking an oven sensor thermistor just after the microwave oven has been operating, the sensor of course won't be room temperature. In this case the sensor must be removed and allowed to cool down to the 50°F to 90°F range.**



HUMIDITY SENSOR ELEMENT

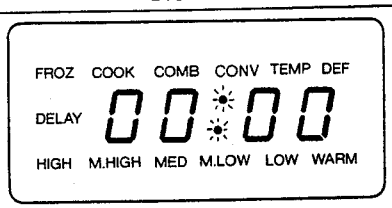
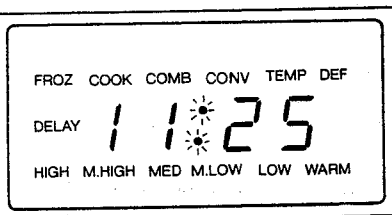
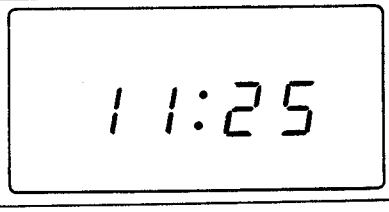
Fig. 46

Temp. (°C)	Temp. (°F)	Thermistor Resistance Nominal (kΩ)	Temp. (°C)	Temp. (°F)	Thermistor Resistance Nominal (kΩ)
30	86	44.4	60	140	13.7
35	95	35.9	65	149	11.5
40	104	29.3	70	158	9.7
45	113	24.0	75	167	8.2
50	122	19.8	80	176	7.0
55	131	16.4	85	185	6.0
			90	194	5.1

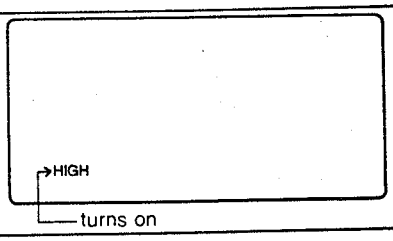
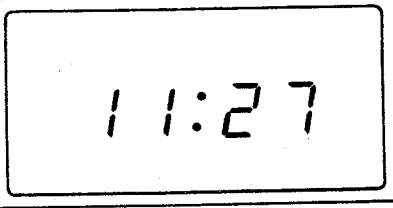
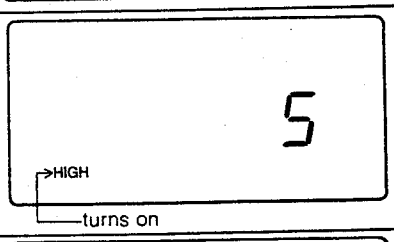
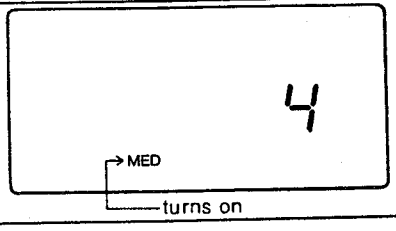
Fig. 47

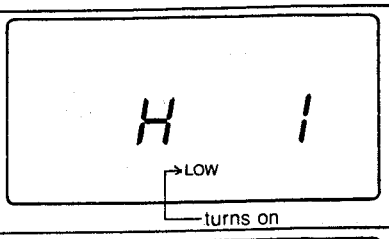
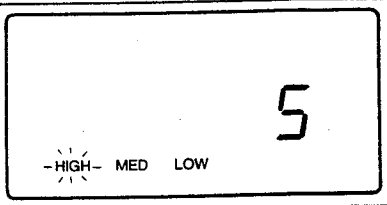
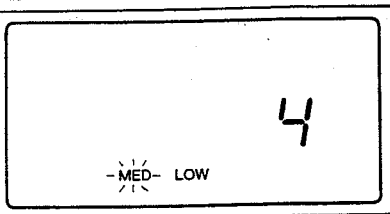
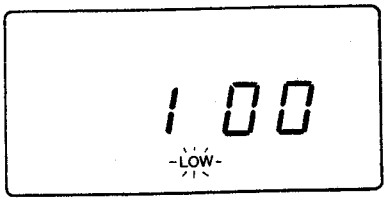
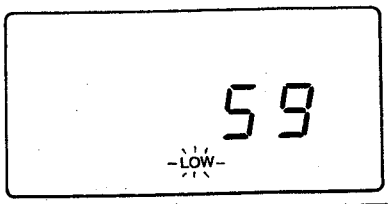
DIGITAL PROGRAMMER CIRCUIT TEST PROCEDURE

1. TO SET CLOCK

STEP	OPERATION	FUNCTION	DISPLAY
1	Plug the power supply cable into wall receptacle.	• Colon starts blinking. • Function word indicator lights turn on. • 00:00 appears.	
2	Enter time of day (TOD) by tapping appropriate number pads. Example : To Set 11 : 25 • Tap 10 min pad once • Tap 1 min pad once • Tap 10 sec pad twice • Tap 1 sec pad 5 times	• Numbers tapped are displayed on the display window. • Colon keeps blinking.	
3	Push Clock Set Button.	• Colon stops blinking and stays on. • TOD has now been registered into the digital programmer circuit and will count up by minutes. • Function word indicator lights turn off.	

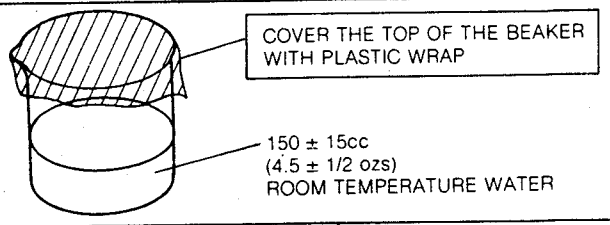
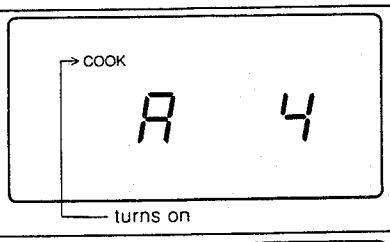
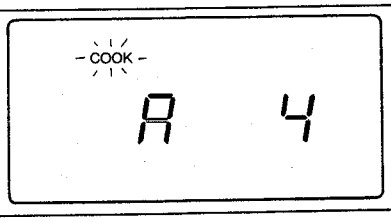
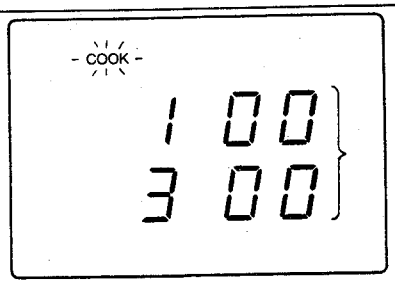
2. TIME COOKING/THREE STAGE COOKING

STEP	OPERATION	FUNCTION	DISPLAY
1	place a water load in the oven.		
2	tap power Pad. (Example : Tap power select pad once for high power setting.)	• Clock time disappears. • "HIGH" power indicator light turns on.	
3	Tap Stop/Reset Pad.	• The display window will show TOD again.	
4	Select "HIGH" power and set for 5 seconds by tapping the appropriate pads. (1st stage)	• Clock time disappears. • "HIGH" power indicator light turns on. • Display window shows "5".	
5	Set MED power for 4 seconds. (2nd stage)	• First stage cooking time "5" and "HIGH" power indicator light disappear. • "MED" power indicator light turns on. • Display window shows "4".	

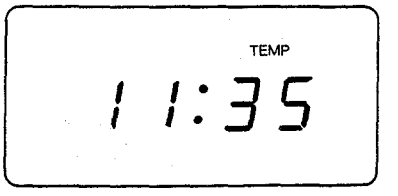
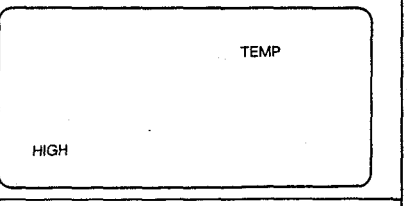
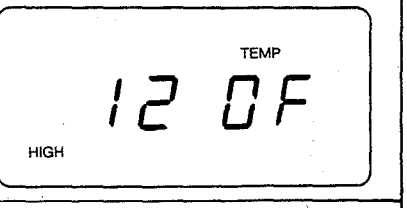
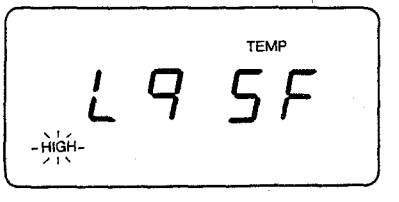
STEP	OPERATION	FUNCTION	DISPLAY
6	Set LOW power for 1 minute. (3rd stage) Tap power select pad 3 times and [1] second pad once.	• Second stage cooking time "4" and "MED" power indicator light disappear. • "LOW" power indicator light turns on. • Display window shows "H1". **NOTE : When low power is selected, H meaning Hour appears in display window and cooking time is shown in hours and minutes.**	
7	Tap Start Pad. (1st stage)	• Oven light turns on. • Microwave activity starts. • Third stage cooking time disappears. • Turntable begins to rotate. • First stage cooking time "5" appears and counts down by seconds. • "HIGH" and "MED" appear and "HIGH" begins to blink.	
8	(2nd stage)	• After completing 1st stage program, oven automatically switches to 2nd stage. • Power indicator light switches to "MED" and starts blinking. • Display window indicates "4" and starts counting down by seconds.	
9	(3rd stage)	• After completing 2nd stage program, oven automatically switches to 3rd stage. • Power indicator "LOW" starts blinking. • Display indicates "1 00" and starts counting down by seconds.	 
10	When third stage cooking ends, oven beeps five times and shuts off automatically.		* TOD appears in display window.

3. AUTO SENSOR COOKING

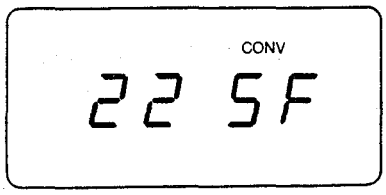
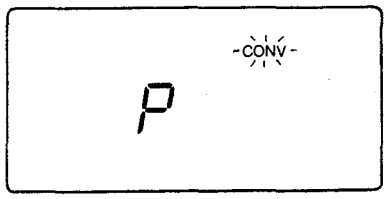
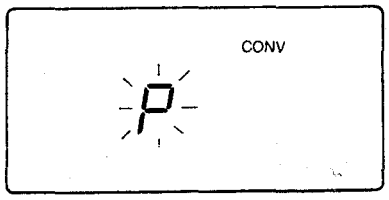
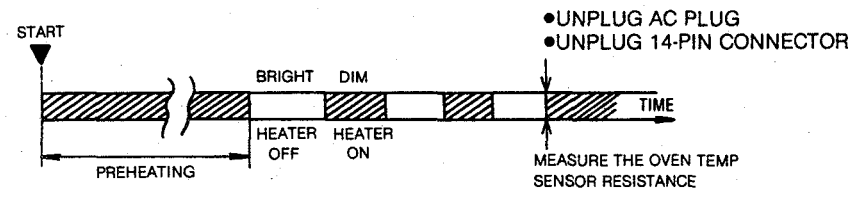
NOTE : Make sure that the outer panel is installed before AUTO SENSOR COOKING TEST, because AUTO SENSOR FUNCTION does not operate normally without the outer panel.

STEP	OPERATION	FUNCTION	DISPLAY
1	Pour 150 ± 15cc (4.5 ± 1/2 ozs) of room temperature water into a beaker, securely cover the top of the beaker with plastic wrap and place the beaker in the center of the oven.		
2	Tap Auto Sensor "Cook" Pad 4 times.	• Clock time disappears. • "A4" appears in the display window. • Auto Sensor "COOK" indicator light turns on. • "AUTO" cooking indicator light turns on.	
3	Tap Start Pad.	• Auto Sensor "COOK" indicator light starts to blink. • The turntable rotates. • Oven light turns on.	
		• The oven light will dim a little, about 50 seconds after start pad is tapped. This indicates that the magnetron has started oscillation.	
	When the humidity sensor detects the steam approximately 2 to 4 minutes after the start pad is touched. Auto Sensor (T1) Cooking automatically switches to Time Cooking (T2). "A4" disappears with two beep sounds and a remainder of cooking time appears in the display window. **NOTE:** **Cooking time will vary depending on the water temperature, the shape of the beaker or the power source voltage.**	• Auto sensor cooking automatically switches to time cooking, "A4" disappears, two beeps sound and 1 00 to 3 00 (1 min to 3 min) appears in the display window as balance of cooking time. The cooking time will change depending on the water temperature, the shape of the beaker or power source voltage.	 **NOTE : If 1 00 to 3 00 (1min to 3min) appears, AUTO SENSOR FUNCTION is normal.**
		• When the balance of cooking time has elapsed, oven stops and beeps 5 times. • Auto "Cook" indicator and oven lights turn off and • TOD reappears in the display window. • Finally check to make sure if TOD is correct or not.	

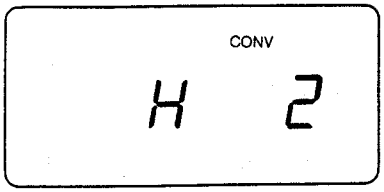
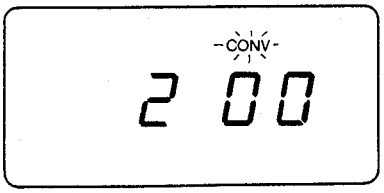
4. TEMPERATURE PROBE COOKING

STEP	OPERATION	FUNCTION	DISPLAY
1	Remove the hot water load from the oven and replace with a cold water load. Insert the sensor probe into the water load and connect the probe jack into its receptacle. **NOTE : Sensor probe must be into water more than one inch.**	• "TEMP" indicator light turns on. • Clock time stays on.	
2	Tap power select pad. (Example : Tap power select pad once for high power setting)	• Clock time disappears. • "HIGH" power indicator light turns on.	
3	Tap temp probe pad 3 times	• "12 0F" appears in display window.	
4	Tap start pad.	• Oven lamp turns on. • Microwave activity starts. • Turntable begins to rotate. • "HIGH" power indicator light begins to blink. • Current temperature of food is displayed in rising 5°F increments starting at 100°F. If starting temperature is lower than 100°F, "L95F" (meaning lower than 100°F) will be displayed until food reaches 100°F.	
		• When water temperature is raised to 120°F ± 11°F, oven beeps five times and shuts off automatically. • T.O.D. appears in the display window.	
5	Measure the water temperature by placing the thermometer in the cup right next to the probe. In this manner they will both sense the same exact temperature the allowable temperature range is 120°F ± 11°F.		
6	Remove the temperature probe from oven wall receptacle.	• "TEMP" indicator light turns off.	
7	Remove the hot water from the oven. Be sure to check T.O.D. is correct.		

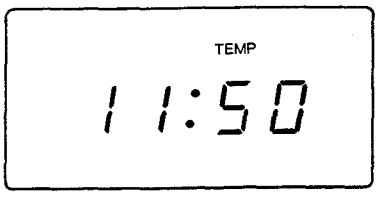
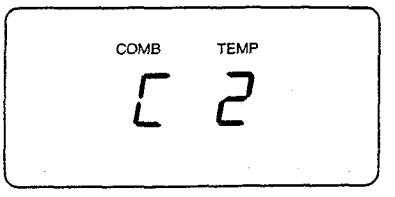
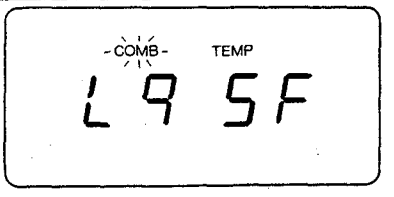
5. CONVECTION COOKING (Preheating)

<table>
<tr><th>STEP</th><th>OPERATION</th><th>FUNCTION</th><th>DISPLAY</th></tr>
<tr><td>1</td><td>Be sure to place only the white glass ceramic tray in the oven.</td><td></td><td></td></tr>
<tr><td>2</td><td>Tap oven temp pad twice.</td><td>• Clock time disappears.
• "CONV" indicator light turns on.
• "22 5F" appears in the display window.</td><td>  </td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">Tap start pad.</td><td>• "P" (meaning preheating) appears in the display window.
• "CONV" begins to blink.
• Oven light turns on.
• Turntable begins to rotate.</td><td>  </td></tr>
<tr><td>• When preheating is completed, oven beeps three times.
• "P" begins to blink.
• "CONV" stops blinking and stays on.
• Oven light stays on and turntable continues to rotate.
• After preheating is completed, oven light should intermittently become a little bright and dim. Wait for a couple of bright and dim cycles. This indicates that heater turns on and off to keep a constant oven temp.</td><td>  </td></tr>
<tr><td>4</td><td colspan="2">As soon as oven light dims unplug the AC power plug and 14p connector from DPC. Measure the oven sensor resistance with ohmmeter as soon as possible. It should read (approx) 70 — 110 kohm.
 
Fig. 48
CAUTION: TO PREVENT BURNS KEEP YOUR BODY, HANDS AND FINGERS AWAY FROM THE OVEN. THE OVEN GETS VERY HOT BOTH DURING AND AFTER HEATER OPERATION.
NOTE : The programmed temperature of 225°F, will be read around the center of the oven, the temp read at the area of the oven sensor can be up to 50°F higher.
NOTE : If door is not opened after preheating, oven will maintain the selected temperature for 30 minutes. After 30 minutes, oven will shut off automatically.</td><td></td></tr>
</table>

6. CONVECTION COOKING (Time cooking)

STEP	OPERATION	FUNCTION	DISPLAY
1	After completion of preheating, be sure to open the door.	• When door is opened, turntable stops rotating. • "P" stops blinking and stays on.	
2	Set cooking time for 2 min.	• "P" disappears in the display window. • "H 2" appears in the display window.	
3	Tap start pad.	• Oven light turns on. • Turntable begins to rotate. • Convection cooking begins. • "CONV" indicator light begins to blink. • Cooking time counts down.	
		• When cooking is completed, oven beeps five times and shuts off automatically. • Turntable stops rotating. • "CONV" indicator light turns off. • T.O.D. appears in the display window.	

7. COMBINATION COOKING (Auto combination cooking)

STEP	OPERATION	FUNCTION	DISPLAY
1	Insert temperature probe into the water load and connect probe jack to oven ceiling receptacle.	• "TEMP" indicator light turns on.	
2	Tap Comb (auto combination) pad twice.	• Clock time disappears. • "AUTO" cooking indicator light turns on. • "COMB" indicator light turns on. • "C2" appears in the display window.	
3	Tap start pad.	• Oven light turns on. • Turntable begins to rotate. • Combination cooking begins. • "COMB" indicator light begins to blink. • Current temperature of food is displayed in rising 5°F increments starting at 100°F. If starting temperature is lower than 100°F, "L95F" (meaning lower than 100°F) will be displayed until food reaches 100°F. NOTE: During auto combination cooking there is a 22 second base time. The 22 second is divided as follows. • a 4 second microwave power period • a 16 second convection heater operation period • a 2 second pause period	
		• When water temperature rises to 130°F ± 11°F, oven beeps five times and shuts off automatically • T.O.D. appears in the display window.	
4	Measure the water temperature by placing the thermometer in the cup right next to the probe. This in manner they will both sense the same exact temprature. The allowable temperature range is 130°F ± 11°F.		
5	Remove the temperature probe from oven ceiling receptacle.	• "TEMP indicator light turns off.	
6	Remove the hot water from the oven. Be sure to check T.O.D. is correct.		

8. COMBINATION COOKING (Time cooking)

STEP	OPERATION	FUNCTION	DISPLAY
1	Tap combination (Micro/Conv) pad twice.	• Cycle number "2" appears in the display window. • "COMB" indicator light turns on.	COMB 2
2	Set cooking time for 2 min.	• "H 2" appears in display window.	COMB H 2
3	Tap start pad.	• Oven lamp turns on. • Combination cooking begins. • "COMB" indicator light begins to blink. • Turntable begins to rotate. • Cooking time starts to count down. NOTE : During combination cooking, in every 22 second time period, the cooking modes are switched with a 4 second microwave power period then 18 seconds of convection heater operation.	-COMB- 2 00

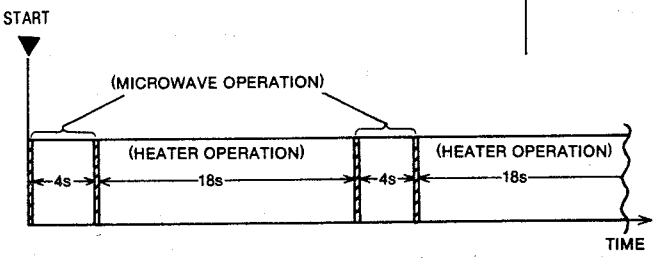
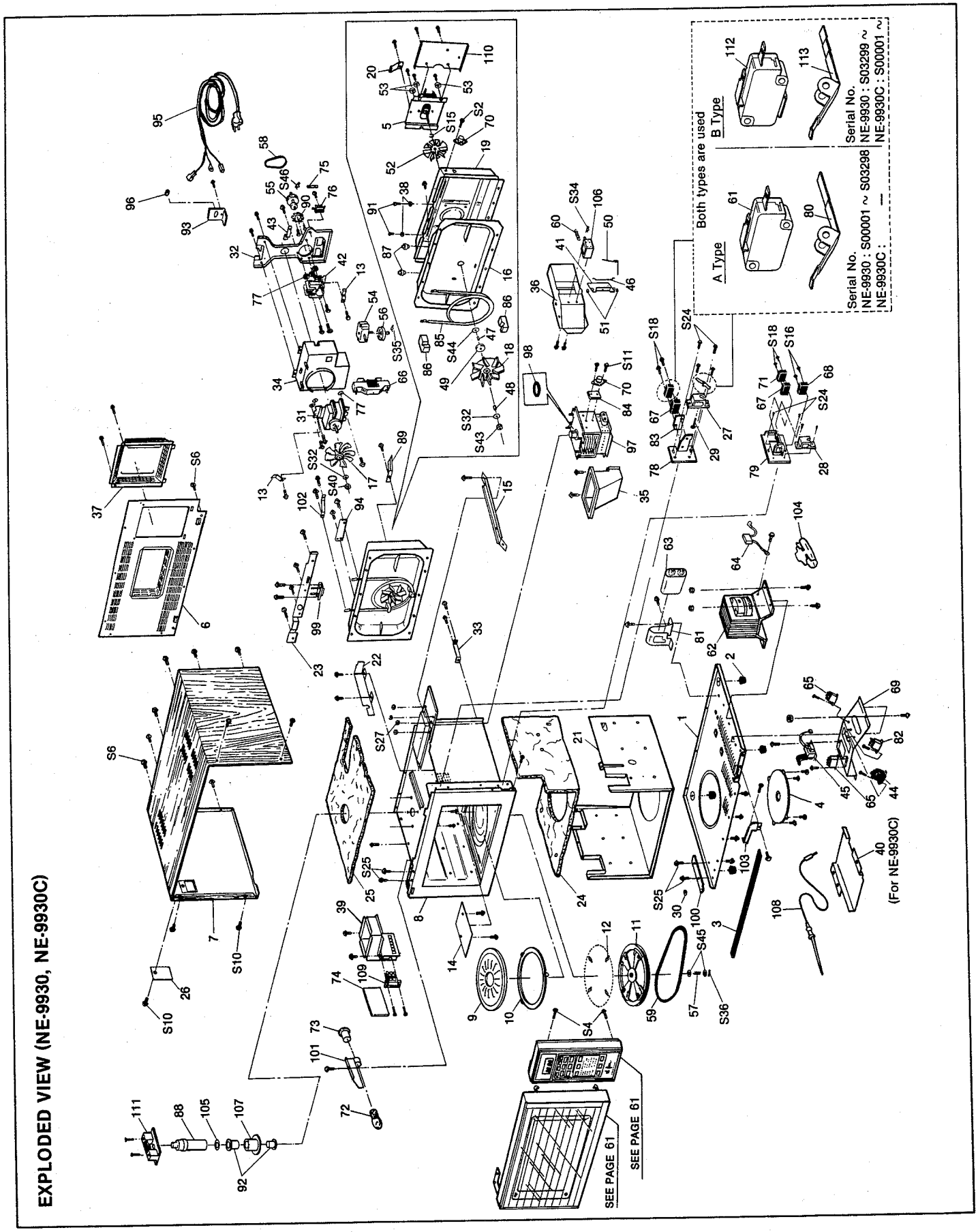


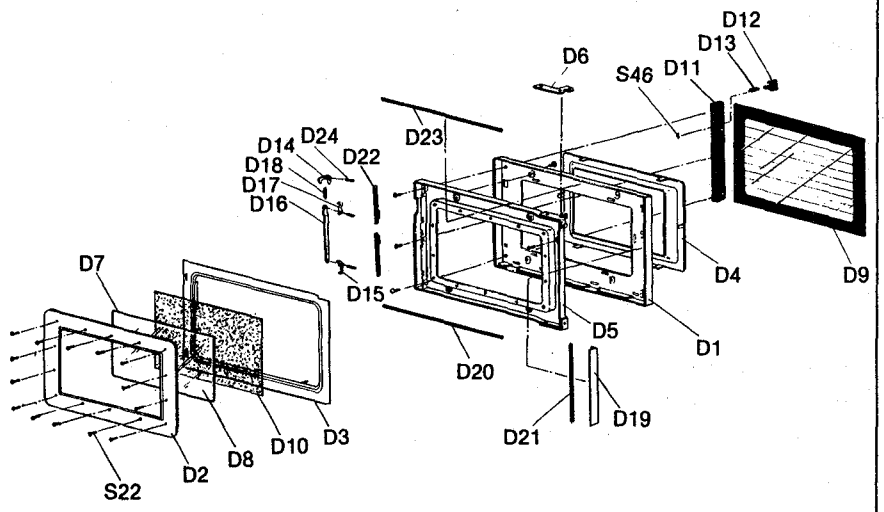
Fig. 49

EXPLODED VIEW AND PARTS LIST



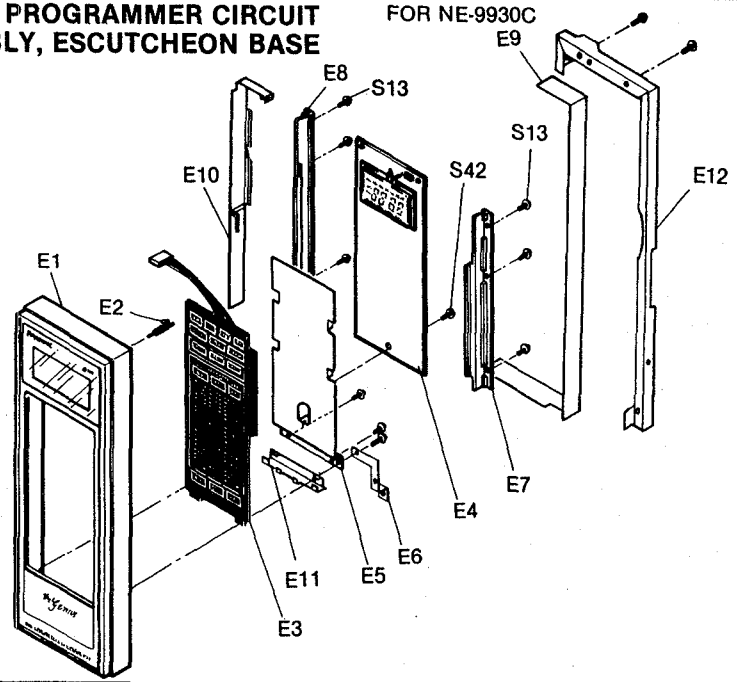
EXPLODED VIEW (NE-9930, NE-9930C)

DOOR ASSEMBLY

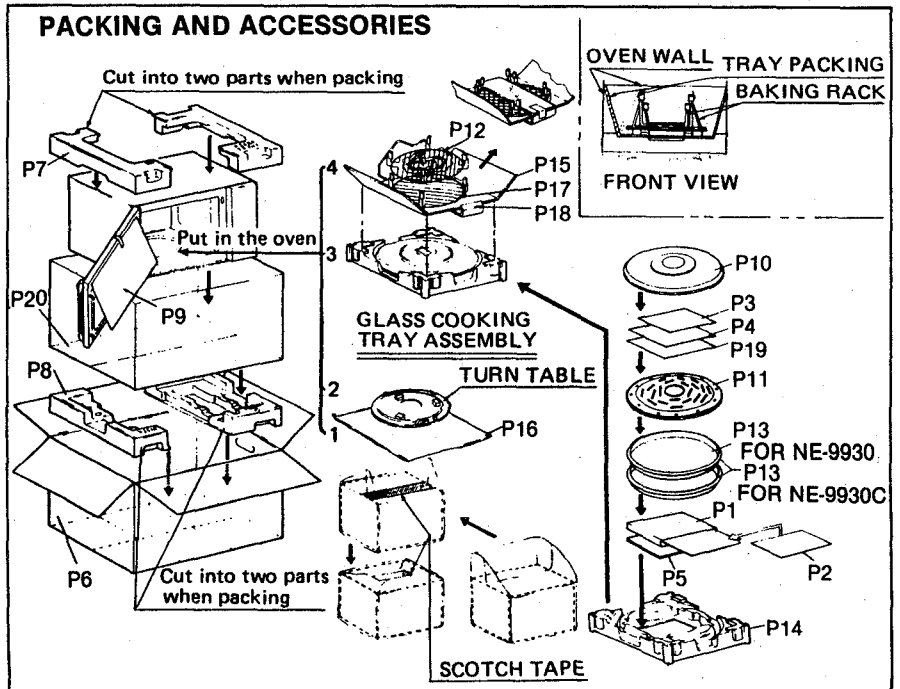


DIGITAL PROGRAMMER CIRCUIT ASSEMBLY, ESCUTCHEON BASE

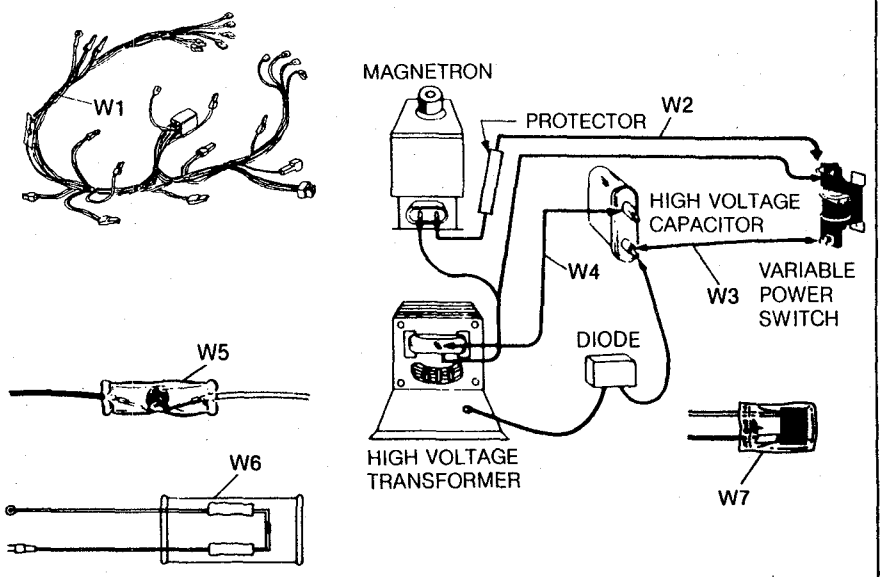
FOR NE-9930C



PACKING AND ACCESSORIES



WIRING MATERIAL



PARTS LIST (NE-9930, NE-9930C)

NOTE : Part numbers are indicated on all parts. Please use these Part numbers for parts orders.
Important safety notice
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
1		ANE110EL20AP	Base assy	1	
2		ANE1008K20AP	Rubber foot	4	
3		ANE1047K20AP	Lower sash	1	
4		ANE110NK20AP	Turntable cover A	1	
5		ANE400VL10AP	Heater fan motor	1	
6		ANE110AL10AP	Back panel assy	1	
7		ANE110DL20AP	Outer panel assy	1	
8	⚠	ANE201AL20AP	Oven assy	1	
9		ANE201FK20AP	Turntable	1	
10		ANE290D-C90	Roller ring assy	1	
11		ANE201BK20AP	Pulley D	1	
12		ANE201KK20AP	Roller A assy	1	(NOTE 1)
13		ANE2049K20AP	Metal ground strap	2	
14		ANE2055K20AP	Cover A	1	
15		ANE2036K20AP	Reinforcement bracket B	1	For oven
16		ANE202AK20AP	Back panel B	1	
17		ANE4008-821	Fan blade	1	
18		ANE202C-E00	Circulation fan blade	1	
19		ANE202ML20AP	Back heater panel	1	
20		ANE3279L10AP	Choke metal A	1	
21		ANE203BL20AP	Heater panel A	1	
22		ANE2218L20AP	Heater panel B	1	
23		ANE2220K20AP	Heater panel D	1	
24		ANE2242L20AP	Adiabatic material A	1	
25		ANE2243L20AP	Adiabatic material B	1	
26		ANE110NH30AC	Lamp cover assy	1	
27	⚠	ANE3020B60AP	Door hook A	1	
28	⚠	ANE3267B60AP	Door hook B	1	
29		ANE3273B60AP	Lever pin	1	
30		ANE3081B60AP	Spacer	1	
31		ANE400AB60AP	Fan motor	1	
32		ANE4111L20AP	Fan motor bracket A	1	
33		ANE4032L20AP	Reinforcement bracket	1	
34		ANE401KL20AP	Orifice assy	1	
35		ANE401EB60AP	Air guide A assy	1	
36		ANE401DK20AP	Air guide C assy	1	
37		ANE402EL20AP	Air guide D assy	1	
38		ANE6518L20AP	Heater ferrite	2	
39		ANE400KL10AP	Exhaust guide assy	1	
40		ANE4120L20CP	Exhaust guide	1	For NE-9930C
41		ANE4173K20AP	Shutter	1	
42		ANE4166L20AP	Turntable motor	1	
43		ANE4196L20AP	Reinforcement bracket B	1	For F.M.bracket
44		ANE6558L20AP	Power relay	1	Power relay B
45		ANE6249L10AP	L.V.Transformer	1	
46		ANE4174K20AP	Shaft	1	
47		ANE4161-E00	Spacer A	1	
48		ANE4162-E00	Spacer B	1	
49		ANE4163K20AP	Spacer C	1	
50		ANE4176K20AP	Spring B	1	
51		ANE4182K20AP	Spacer	2	
52		ANE4159-E00	Fan	1	
53		ANE4165-C40	Rubber	3	
54		ANE490CL10AP	Gear box assy	1	
55		ANE4131L20AP	Pulley A	1	
56		ANE4133-C40	Pulley C	1	
57		ANE4143-D00	Spring	1	
58		ANE4060L20AP	Belt A	1	
59		ANE4110L20AP	Belt B	1	
60		ANE4175K20AP	Spring	1	

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
61	⚠	ANE6470-E60	Switch	1	Door switch
62	⚠	ANE6005L00AP	H.V.Transformer	1	
63	⚠	ANE6090K20AP	H.V.Capacitor	1	
64	⚠	ANE6202-C90	Diode	1	
65		ANE6126K20AC	Power relay	2	Power relay A Power relay D
66	⚠	ANE6330930AP	Variable power switch	1	
67	⚠	ANE6142-D60	Switch	2	Latch switch A, B
68	⚠	ANE6158B60AP	Switch	1	Short switch
69		ANE6246L20AP	Power relay bracket	1	
70		ANE6145G10AP	Thermal cutout	2	For oven For magnetron
71		ANE6481G00AP	Switch	1	Oven lamp switch
72		ANE6030540AP	Oven lamp	1	125V 20W
73		ANE6152-780	Oven lamp socket	1	
74		ANE6437-860	Glass plate	1	
75	⚠	ANE6230C30AQ	Fuse	1	15A
76		ANE6231770BN	Fuse holder	1	
77		ANE6324-820	Rubber	6	
78		ANE6242B60AP	Switch bracket	1	
79	⚠	ANE302PB60AP	Switch bracket B	1	
80		ANE6241L10AP	Lever	1	
81		ANE6037G00AP	Capacitor bracket	1	
82		ANE6126L10AP	Power relay	1	Power relay C
83		ANE6306910AP	Insulation sheet R	1	
84		ANE6238B60AP	Spacer	1	
85		ANE630GL20AP	Heater A	1	For NE-9930
		ANE630GL20CP	Heater A	1	For NE-9930C
86		ANE6417-C40	Heater support	2	
87		ANE6501K90AP	Holder C	2	
88		ANE601KG00AP	Sensor jack	1	
89		ANE2077K20AP	Reinforcement bracket D	1	For oven
90		ANE4160L20AP	Fan	1	
91		ANE6501L20AP	Holder C	2	
92		ANE6243G00AP	Spacer	2	
93		ANE9035L20AP	Cord stopper	1	For NE-9930
		ANE9035L20CP	Cord stopper	1	For NE-9930C
94		ANE6156-E00	Insulation panel A	1	
95		ANE900CG00AP	Power supply cord	1	For NE-9930
		ANE900CB60CP	Power supply cord	1	For NE-9930C
96		ANE9027B70AP	Cord bushing	1	For NE-9930
		ANE9027510RN	Cord bushing	1	For NE-9930C
97	⚠	2M157-M2	Magnetron	1	
98	⚠	ANE5002910AP	Embossed ring	1	
99		ANE604LK20AP	Oven temp sensor	1	
100	⚠	ANE3007B60AP	Lower hinge	1	
101		ANE602VL20AQ	Oven lamp bracket	1	
102		ANE9140-E00	Conducting plate	1	
103		ANE1161K20AP	Reinforcement bracket	1	
104		ANE6071L20AP	Insulation sheet B	1	
105		ANE6247G00AP	Spacer B	1	
106		ANE6017K20AP	Solenoid	1	
107		ANE604PK20AP	Sensor cover	1	
108	⚠	ANE601LK20AP	Sensor probe	1	
109		ANE601LB60AP	Sensor element	1	
110		ANE8272-E00	Back metal	1	
111		ANE600DK20AP	Terminal board	1	
112	⚠	ANE6470L10AP	Switch	1	Door switch
113		ANE6241L11AP	Lever	1	

NOTE 1 : When ordering the roller A assy, four rollers will be shipped.
When replacing the roller, four rollers should be replaced at the same time.
Otherwise the turntable may not turn smoothly.

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
DOOR ASSEMBLY					
D1	⚠	ANE302AK20AP	Door A	1	
D2	⚠	ANE3002K20AP	Door B	1	
D3	⚠	ANE3085K20AP	Door C	1	
D4		ANE3050K20AP	Bracket	1	
D5	⚠	ANE301QB60AP	Door E assy	1	
D6	⚠	ANE3006B60AP	Upper hinge	1	
D7	⚠	ANE3031910AP	Rubber	1	
D8	⚠	ANE3145K20AP	Door screen A	1	
D9		ANE3146K20AP	Door screen B	1	
D10	⚠	ANE3197G00AP	Door screen C	1	
D11		ANE300RK20AP	Door handle	1	
D12		ANE3147B60AP	Handle latch button	1	
D13		ANE3243910AP	Spring	1	
D14		ANE3018B60AP	Door key A	1	
D15		ANE3019B60AP	Door key B	1	
D16		ANE3107K20AP	Door key lever	1	
D17		ANE3139B60AP	Door key lever B	1	
D18		ANE3021K20AP	Spring	1	
D19		ANE3183B60AP	Ferrite metal A	1	
D20	⚠	ANE3088B60AP	Ferrite rubber A	1	
D21	⚠	ANE3089B60AP	Ferrite rubber B	1	
D22	⚠	ANE3130L20AP	Ferrite rubber C	2	
D23	⚠	ANE3131B60AP	Ferrite rubber D	1	
D24		ANE3056930AP	Handle pin	3	
DIGITAL PROGRAMMER CIRCUIT ASSEMBLY, ESCUTCHEON BASE					
E1		ANE800LL10AP	Escutcheon base assy	1	
E2		ANE8225K70AP	Clock button	1	
E3		ANE6479L10AP	Membrane switch	1	
E4		ANE603LL10AP	D.P.Circuit assy	1	
E5		ANE8127K70AP	Bracket	1	
E6		ANE8164K70AP	Ground metal	1	
E7		ANE604HK70AP	P.C.B. Stopper A	1	For NE-9930
		ANE6313K70AP	P.C.B. Stopper A	1	For NE-9930C
E8		ANE6499K70AP	P.C.B. Stopper B	1	
E9		ANE8250K70CP	Metal shield B	1	For NE-9930C
E10		ANE802XK70AP	Metal shield C	1	
E11		ANE8264K70AP	Ground metal B	1	
E12		ANE803NL20AP	Escutcheon bracket	1	
PACKING AND ACCESSORIES					
P1		ANE000BK70AP	Cook book	1	
P2		ANE0003L10AP	Instruction book	1	For NE-9930
		ANE0003L10CP	Instruction book	1	For NE-9930C
P3		ANE0013K20AP	Warranty card	1	For NE-9930
		ANE0013B10CP	Warranty card	1	For NE-9930C
P4		ANE0169B60AP	Servicenter list	1	For NE-9930
		ANE0169B60CP	Servicenter list	1	For NE-9930C
P5		ANE000EL10AP	Supplement cookbook	1	
P6		ANE0102L10AP	Outer case	1	For NE-9930
		ANE0102L10CP	Outer case	1	For NE-9930C
P7. 8		ANE010AK20AP	Filler set	1	
P9		ANE0107580AP	Door sheet	1	
P10		ANE0601K20AP	Glass ceramic tray	1	
P11		ANE0648K20AP	Spatter shield	1	
P12		ANE060XK20AP	Low baking rack	1	
P13		ANE0603K20AP	Cookie sheet	1	For NE-9930
		ANE0603K20AP	Cookie sheet	2	For NE-9930C
P14		ANE0113K20AP	Tray styrol	1	
P15		ANE0108K20AP	Tray packing	1	
P16		ANE0207-860	Styrol sheet	1	
P17		ANE060YK20AP	High baking rack	1	
P18		ANE0117K20AP	Tray packing B	1	
P19		ANE0511K20AP	Attachment label	1	For NE-9930
		ANE0511K20CP	Attachment label	1	For NE-9930C
P20		ANE0106K20AP	Vinyl cover	1	
WIRING MATERIAL					
W1		ANE030AL10AP	Lead wire harness	1	For NE-9930
		ANE030AL10CP	Lead wire harness	1	For NE-9930C
W2		ANE0351L00AP	Lead wire	1	With protector
W3		ANE0363-860	Lead wire	1	
W4		ANE0351-820	Lead wire	1	
W5		ERZC10DK241U	Varistor	1	This is assembled in lead wire harness (W1).
W6		ANE604QK30AC	Surge absorber	1	
W7		ECQJ0186A	Spark killer	1	

Ref. No.	Part No.	Description	Size (mm)	Q'ty	Usage
STANDARD PARTS					
S1	XTW3 + 6B	Screw	3x6	2	Fan
S2	XTWANE4 + 8BN	Screw	4x8	1	Thermal cutout(For oven)
				2	Back heater panel
				2	Insulation panel A
				2	Heater panel A
				2	Reinforcement bracket
				1	Reinforcement bracket B
S3	XTWANE4 + 8B	Screw	4x8	1	Base
				1	Base earth (Ground)
				1	Door A
				1	Metal ground strap
S4	XTWANE4 + 12B	Screw	4x12	2	Gear box
				4	Orifice
				2	Air guide D
				1	Fan motor bracket A
				2	Reinforcement bracket
				6	Base
				4	Turntable cover A
				4	Door A
				2	Capacitor bracket
				1	Cord stopper
				2	Door hook A
				1	Door hook B
				2	Escutcheon bracket
				1	Reinforcement bracket
				2	Exhaust guide (For NE-9930C)
S5	XTWANE4 + 12BN	Screw	4x12	2	Oven lamp bracket
				2	Reinforcement bracket B
				1	Air guide C
				8	Back heater panel
				1	Reinforcement bracket B
				1	Heater panel A
				1	Choke metal A
				2	Heater panel B
				1	Reinforcement bracket
				2	Orifice
				2	Exhaust guide
				2	Air guide A
				2	Back metal
S6	XTWANE4 + 12E	Screw	4x12	1	Power supply cord earth (Ground)
				1	Diode earth (Ground)
				7	Outer panel
				4	Back panel
				1	Metal ground strap
				1	Surge absorber earth (Ground)
S7	XTWANE4 + 16B	Screw	4x16	2	Door handle
S8	XTNANE4 + 10B	Screw	4x10	1	Door hook B
				1	Fuse holder
S9	XTW3 + 8B	Screw	3x8	3	Power relay
				1	Power relay B
				1	L.V.Transformer

Ref. No.	Part No.	Description	Size (mm)	Q'ty	Usage
S10	XTCANE4+10BC	Screw	4x10	4	Outer panel
				1	Lamp cover
S11	XTEANE3+6B	Screw	3x6	2	Thermal cutout (For magnetron)
S12	XYEANE5+E16T	Screw	5x16	2	H.V.Transformer
				1	Power relay bracket
S13	XTNANE4+12B	Screw	4x12	2	Escutcheon bracket
				3	P.C.B.Stopper A
				3	P.C.B.Stopper B
				2	Bracket
				1	Ground metal
S14	XNG4EVS	Nut	M4	2	Heater support
S15	XUE32KP	U ring		1	Fan
S16	XYN3+F16S	Screw	3x16	2	Short switch
S17	XYN3+F18S	Screw	3x18	2	Latch switch A
S18	XYN3+F27S	Screw	3x27	2	Latch switch A
				2	Latch switch B
S19	XYN35+C8VS	Screw	3.5x8	2	Heater A
				1	Conducting plate
S20	XYN4+F10S	Screw	4x10	1	D.P.Circuit earth(Ground)
				2	Variable power switch
S21	XYN3+F6	Screw	3x6	2	Solenoid
S22	XYW35+B12VS	Screw	3.5x12	14	Door B
S23	XSNANE4+13	Screw	4x13	3	Fan bracket A
				3	Fan motor
				3	Turntable motor
S24	XYEANE4+F12S	Screw	4x12	2	Switch bracket
				2	Switch bracket B
S25	XYEANE5+E12S	Screw	5x12	2	Upper hinge
				2	Lower hinge
S26	XST4+5VS	Screw	4x5	2	Cover A
				4	Sensor cover
S27	XNWANE5ES	Nut	M5	4	Magnetron
S28	XYN3+F8S	Screw	3x8	2	Terminal board
S29	XNWANE5ES2	Nut	M5	2	H.V.Transformer
				1	Power relay bracket
S30	XWA4BV	Washer	M4	2	Heater support
S31	XWA3BV	Washer	M3	2	Terminal board
S32	XWG4BV	Washer	M4	1	Fan
				1	Circulation fan blade
S33	XWGANE3+6	Washer	M3	2	Terminal board
S34	XPD3X15B	Wire pin	3x15	1	Solenoid
S35	XPDANE3A19KP	Wire pin	3x19	1	Pulley C
S36	XPDANE8A28KP_	Wire pin	8x28	1	Pulley D
S37	XTNANE4+10BN	Screw	4x10	2	Oven temp sensor
				2	Sensor element
S38	XTWANE4+10B	Screw	4x10	1	Door handle
S39	XST4+10VS	Screw	4x10	2	Heater support
S40	XNG4ESL	Nut	M4	1	Fan
S41	XTWANE4+10B	Screw	4x10	1	Door handle
S42	XYN4+F8S	Screw	4x8	1	D.P.Circuit
				1	Escutcheon bracket
S43	XNG4EVSL	Nut	M4	1	Circulation fan blade
S44	XWGANE5BV	Washer	M8	1	Circulation fan blade
S45	XWGANE8	Washer	M8	2	Pulley D
S46	XPDANE41A21KP	Wire pin	4x21	1	Handle latch button
				1	Pulley A

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(M),(To) &(E)

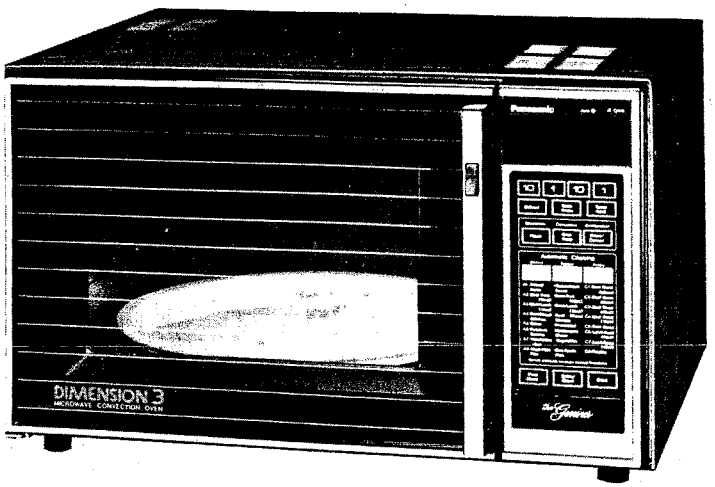
ORDER NO. MOD84070414A5

Service Manual

Microwave Oven

NE-9930P

This oven can be used for both 50 Hz and 60 Hz areas with a standard 115-120 volt supply. A minor adjustment is necessary to change from 50 to 60 Hz, or vice versa, but only authorized servicemen are qualified to make this frequency change.



NOTE : THIS MANUAL MUST BE USED IN CONJUNCTION WITH THE NE-9930 SERVICE MANUAL. (ORDER NO. MOD81110125C1) FOR ADDITIONAL INFORMATION, PLEASE REFER TO MODEL NE-9930.

Specifications

Power Source :	115 V AC Single Phase 50/60 Hz
Power Requirement :	1420 watts : (13.0 A) : Micorowave 1550 watts (13.8 A) : Convection/Combination
Output :	700 watts : Full microwave power 1300 watts : Heater
Oscillation Frequency :	2450 MHz
Magnetron :	2M157-M2
Timer :	99 min. 99 sec./9 hr. 99 min. (Low and Delay/Stand)
Outside Dimensions :	24-3/4" (W) × 22" (D) × 15-1/8" (H) 630 mm (W) × 560 mm (D) × 385 mm (H)
Oven Cavity Dimensions :	15-1/2" (W) × 15-1/2" (D) × 9-1/2" (H) 395 mm (W) × 395 mm (D) × 241 mm (H)
Weight :	86 lbs 39 kg
Specifications subject to change without notice.	

Panasonic®

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SCHEMATIC DIAGRAM

NE-9930P SCHEMATIC DIAGRAM

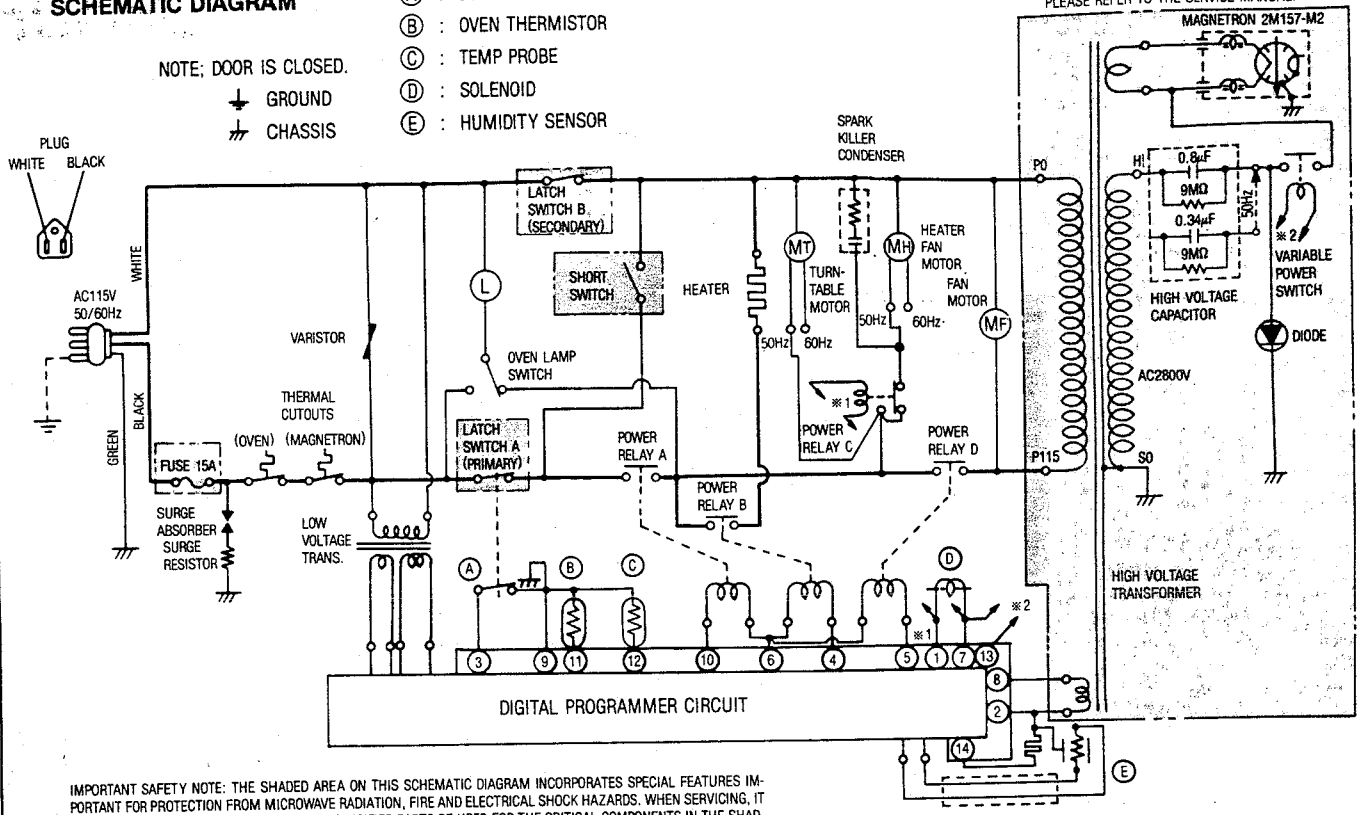
NOTE; DOOR IS CLOSED.

⏚ GROUND

⏚ CHASSIS

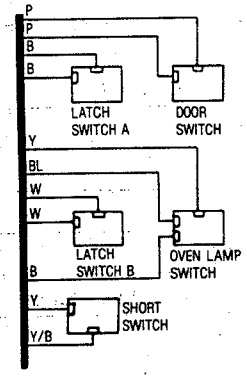
Ⓐ : DOOR SWITCH
Ⓑ : OVEN THERMISTOR
Ⓒ : TEMP PROBE
Ⓓ : SOLENOID
Ⓔ : HUMIDITY SENSOR

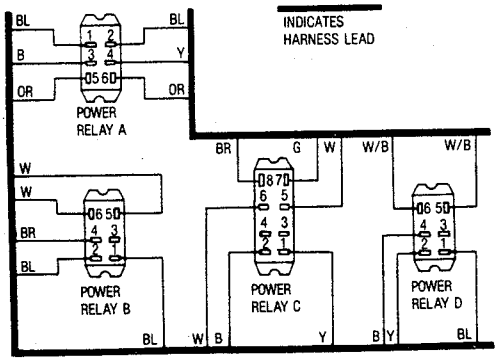
NOTE: THIS CIRCUIT DOES NOT CONTAIN 10Ω RESISTOR. PLEASE REFER TO THE SERVICE MANUAL.

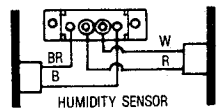


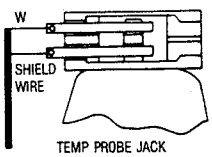
IMPORTANT SAFETY NOTE: THE SHADED AREA ON THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM MICROWAVE RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING, IT IS ESSENTIAL THAT ONLY MANUFACTURERS SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SHADED AREAS OF THE SCHEMATIC DIAGRAM.

WIRING DIAGRAM









SYMBOL	COLOR
B	BLACK
BR	BROWN
R	RED
OR	ORANGE
Y	YELLOW
BL	BLUE
G	GRAY
W	WHITE
P	PINK
W/BL	WHITE/BLUE

(ANE0001Z10PP)

Fig. 1

PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

(A) Do not operate or allow the oven to be operated with the door open.
(B) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary:
  (1) Interlock operation
  (2) Proper door closing
  (3) Seal and sealing surfaces (arcing, wear, and other damage)
  (4) Damage to or loosening of hinges and latches.
  (5) Evidence of dropping or abuse
(C) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity and connections.
(D) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.
(E) A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.

CHANGING THE FREQUENCY OF POWER SUPPLY

CAUTION

1. Disconnect the plug from wall outlet and discharge the high voltage capacitor.
2. Do not touch any capacitors on the control panel, otherwise you may get an electric shock.
3. Touch yourself to ground before working on the DPC board to discharge any static charge built up in your body.
4. If customers use this microwave/convection oven without the changes described below, the high voltage transformer and/or magnetron may be damaged.

1. HIGH VOLTAGE CAPACITOR WIRING

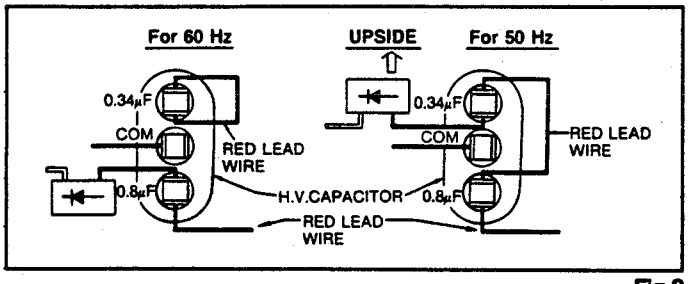
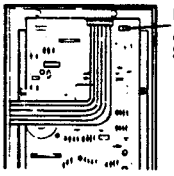


Fig.2

2. DIGITAL PROGRAMMER CIRCUIT WIRING



AREA	HOW TO ADJUST FREQUENCY
50Hz	Turn switch knob to left.
60Hz	Turn switch knob to right.

Fig. 3

3. TURNTABLE MOTOR WIRING

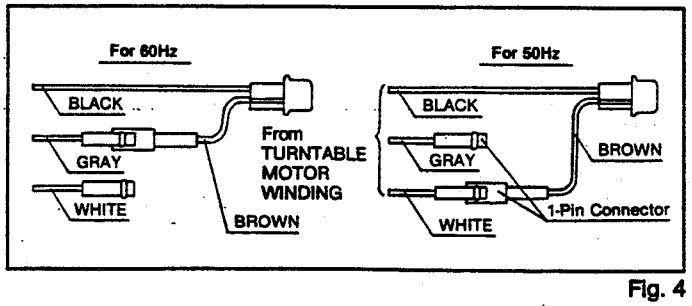


Fig. 4

4. HEATER FAN MOTOR WIRING

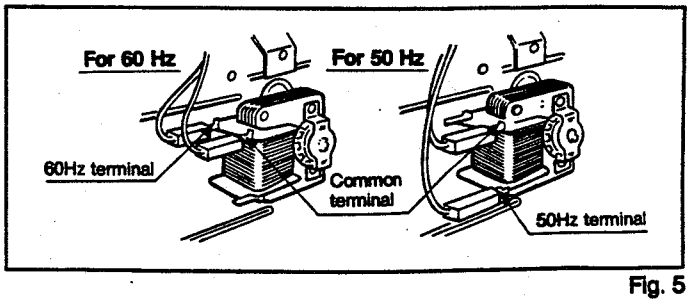


Fig. 5

5. CHANGE THE FREQUENCY SPECIFICATION

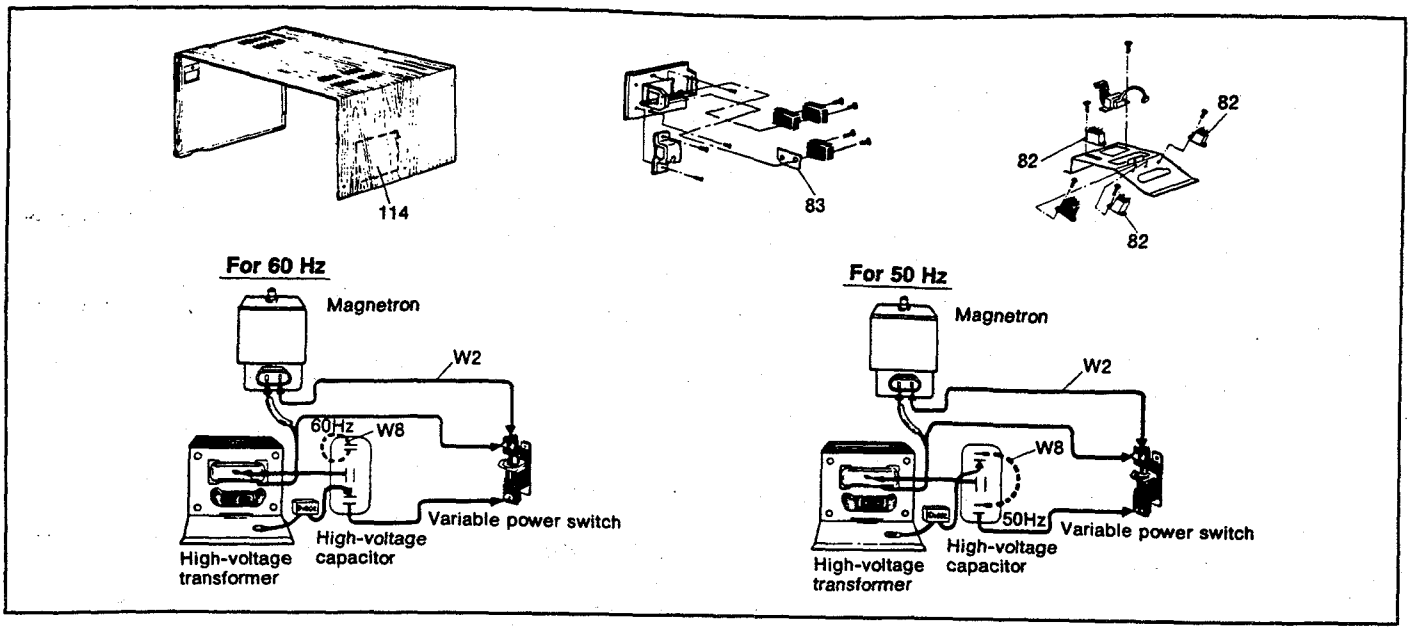
Use the attached labels to change the frequency specification from 50 Hz to 60 Hz, or vice versa, on the identification plate and user warning label. It is essential that the microwave/convection oven is used only on the frequency indicated.

EXPLODED VIEW AND PARTS LIST

This list shows only the unique parts from model NE-9930.
Please use these Part Numbers for Parts orders.

IMPORTANT SAFETY NOTICE:

Components identified ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.



Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
5		ANE400VZ10PP	Heater fan motor	1	(NOTE 2)
7		ANE110DZ00PP	Outer panel assy	1	(NOTE 1)
26		ANE1060Z10AP	Lamp cover assy	1	
42		ANE4166L20PP	Turntable motor	1	(NOTE 2)
45		ANE6249Z10AP	L.V.Transformer	1	
62	⚠	ANE6005B60PP	H.V.Transformer	1	(NOTE 2)
63	⚠	ANE6090B60PP	H.V.Capacitor	1	(NOTE 2)
65		ANE6126K20AC	Power relay	0	Deletion
76		ANE6231B00AP	Fuse holder	1	
80		ANE630WL10AP	Lever	1	
81		ANE6037B60AP	Capacitor bracket	1	
82		ANE6558L20AP	Power relay	3	
83		ANE6306910AP	Insulation sheet R	2	
85		ANE630GL20CP	Heater A	1	
112	⚠	ANE6470L10AP	Switch	0	Deletion
113		ANE6241L11AP	Lever	0	Deletion
114		ANE0001Z10PP	Schematic diagram	1	Addition
D16		ANE3139B60AP	Door key lever B	1	
D17		ANE3107K20AP	Door key lever	1	
E1		ANE800LZ10AP	Escutcheon base assy	1	
E3		ANE6479Z10AP	Membrane switch	1	
E4		ANE603LZ10PP	D.P.Circuit assy	1	(NOTE 3)
P2		ANE0003Z10PP	Instruction book	1	
P3		ANE0013Q00PP	Warranty card	1	
W2		ANE0351-770	Lead wire	1	
W7		ECQJ0186N	Spark killer	1	
W8		ANE0361-C90	Lead wire	1	Addition

NOTE 1 : Please order schematic diagram together.
2 : This part can be used for 50 Hz and 60 Hz areas.
3 : This part has 50 Hz/60 Hz select switch for changing the frequency.
This is the only difference from digital programmer circuit (ANE603LZ10PP) which is used for model NE-9930A.
4 : If the customer has an NE-9930A and wants to change the frequency (60 Hz to 50 Hz), please order following parts.
Ref. No. 5 (Heater fan motor: ANE400VZ10PP)
Ref. No. 42 (Turntable motor: ANE4166L20PP)
Ref. No. 62 (H.V.Transformer: ANE6005B60PP)
Ref. No. 63 (H.V.Capacitor: ANE6090B60PP)
Ref. No. 81 (Capacitor bracket: ANE6037B60AP)
Ref. No. 85 (Heater A: ANE630GL20CP)
Ref. No. E4 (D.P.Circuit assy: ANE603LZ10PP)
Ref. No. W2 (Lead wire: ANE0351-770)
Ref. No. W8 (Lead wire: ANE0361-C90)

S-Z1 PPH
Printed in Japan
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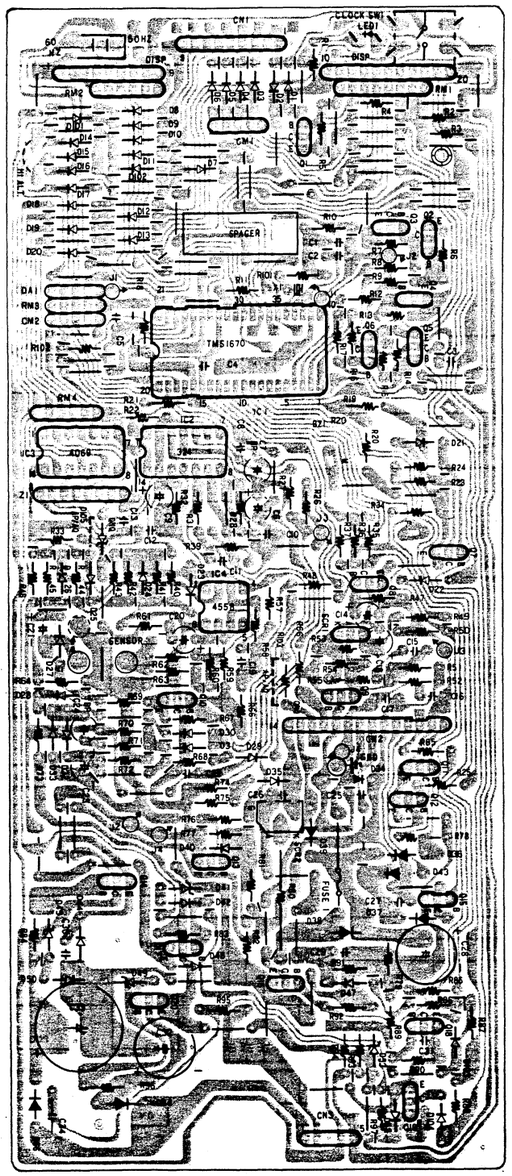
ORDER NO. MOD84110477S5

NE-9930A NE-9930P	NE-9930A NE-9930P

Digital Programmer Circuit Parts List

MICROWAVE OVEN



S-Z1 AP/PP/AQ

MISCELLANEOUS

Ref. No.	Part No.	Description	Pcs/ Set	Remarks
DISP	ANE6456L10AP	Fluorescent Tube	1	
SPACER	ANE1008L10AP	Spacer Cushion	1	For DISP
CN1	AEEMWD0809	9 pin connector	1	
CN2	AEEMWP851401	14 pin connector	1	
CN3	AEEM1718255	5 pin connector	1	
BZ1	EFB-RL37C04	Buzzer	1	
X1	AEFFKBR540B	Ceramic Resonator	1	540kHz
FIN	ANE6244C10AQ	Heat sink	1	For Q14
	XYN3+C10	Screw	2	For Q14
	XNF3	Nut	2	For Q14
FUSE1	XBA1H40NU100	Fuse	1	4A
LED1	AELNSEL1110R	LED	1	Red
HOLDER	ANE6459L10AP	LED Holder	1	
SENSOR	ANE6359L10AP	Shield Cable	1	
SW1	EVQPXR04K	Clock set Switch	1	
SW2	ANE6161K80PP	Select Switch	1	For NE-9930P

SEMICONDUCTORS

Ref. No.	Part No.	Description	Pcs/ Set	Remarks
IC1	AEIC16703960	L.S.I.	1	MP3960
IC2	AEICμPC324	IC	1	μPC324
IC3	AEICμPD4069C	IC	1	μPD4069C
IC4	AEICμPC4558	IC	1	μPC4558
Q1,2,3,4, 5,6,7,10, 18,19	2SC1685-R,S	Transistor	10	
Q8,9,11, 12,15,16	2SC1318-R,S	Transistor	6	
Q13	2SA564A-Q,R	Transistor	1	
Q14	2SD762-O,P	Transistor	1	
Q17	2SA720-Q,R,S	Transistor	1	
Q20	2SA777-Q,R,S	Transistor	1	
D1,2,3,4, 5,6,8,9, 10,11,12, 13,15,18, 19,20,21, 22,23,24, 25,26,27, 28,29,30, 31,32,33, 35,40,42, 44,47,48, 50,52,101, 102,103,104	AEDN1SS53T	Diode	41	
D16	AEDN1SS53T	Diode	1	For NE-9930P
D34,36,37, 38,39,43, 54,56	AEDNERA1202	Diode	8	
D41,45	AEDZ10EB1	Zener Diode	2	RD10EB1
D49	AEDZ20EB3	Zener Diode	1	RD20EB3
D53	AEDZ4R7EB1	Zener Diode	1	RD4.7EB1
SCR1	AESF03P2M	SCR	1	
SCR2	AESF2P2M	SCR	1	
DA1	AEDSDAN401	Diode	1	

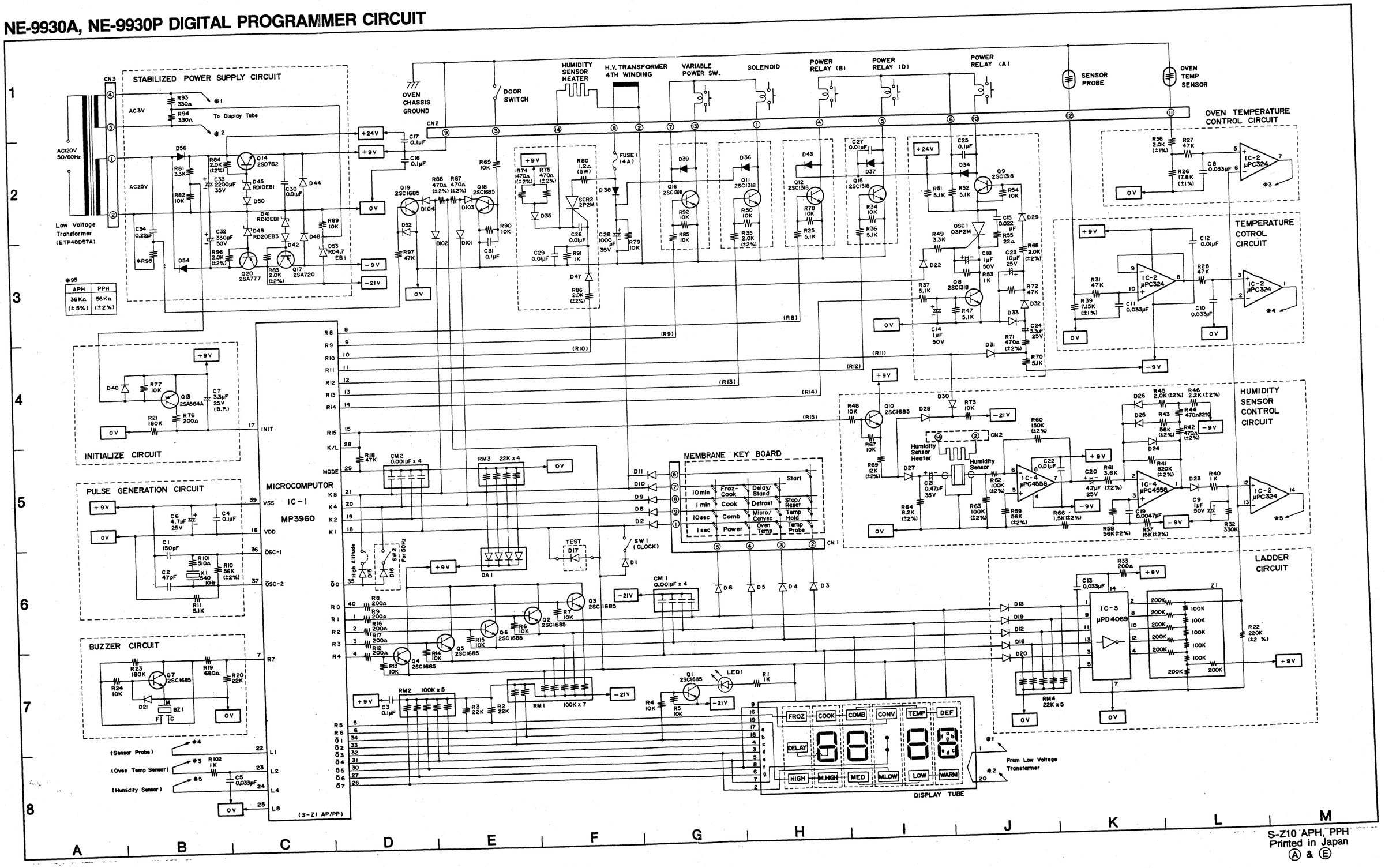
CAPACITORS

Ref. No.	Part No.	Description			Pcs/ Set	Remarks
C1	ECKR1H151KB	150pF	±10%	50V	1	
C2	ECCR1H470J	47pF	±5%	50V	1	
C3,16,17, 25,31	ECFR1H104Z	0.1μF	−20%+80%	50V	5	
C4	ECKF1H104Z	0.1μF	−20%+80%	50V	1	
C5,8,10, 11,13	ECKR1H333Z	0.033μF	−20%+80%	50V	5	
C6,20	ECEA1ES4R7B	4.7μF	±20%	25V	2	
C7,24	ECEA1EN3R3B	3.3μF	±20%	25V	2	
C9,14,18,	ECEA1HS010B	1μF	±20%	50V	3	
C12,22,26, 27,29,30	ECKR1H103Z	0.01μF	−20%+80%	50V	6	
C15	ECQM1H223MZ3	0.022μF	±20%	50V	1	
C19	ECKR1H472Z	0.0047μF	−20%+80%	50V	1	
C21	ECSF1VE474B	0.47μF	±20%	35V	1	
C23	ECEA1ES100B	10μF	±20%	25V	1	
C28	ECEA1VU102E	1000μF	±20%	35V	1	
C32	ECEA1HU331E	330μF	±20%	50V	1	
C33	ECEA1VU222E	2200μ	±20%	35V	1	
C34	ECQE1224KN	0.22μF	±10%	100V	1	
CM1,2	EXFP4102ZW	0.001μFX4	−20%+80%	50V	2	

RESISTORS

Ref. No.	Part No.	Description			Pcs/ Set	Remarks
R1,40,53, 91,102	ERD25TJ102	1kΩ	±5%	1/4W	5	
R2,3,20,	ERD25TJ223	22kΩ	±5%	1/4W	3	
R4,5,6,7, 13,14,15,24, 34,48,50,54, 65,67,73,77, 78,79,82,85, 89,90,92	ERD25TJ103	10kΩ	±5%	1/4W	23	
R8,9,12, 16,17,33,76	ERD25TJ201	200Ω	±5%	1/4W	7	
R10,43, 58,59	ERO25TKG5602	56kΩ	±2%	1/4W	4	
R11,25,36, 37,47,51, 52,70	ERD25TJ512	5.1kΩ	±5%	1/4W	8	
R18,27,28, 31,72,97	ERD25TJ473	47kΩ	±5%	1/4W	6	
R19	ERD25TJ681	680Ω	±5%	1/4W	1	
R21,23	ERD25TJ184	180kΩ	±5%	1/4W	2	
R22	ERO25TKG2203	220kΩ	±2%	1/4W	1	
R26	ERO25TKF1782	17.8kΩ	±1%	1/4W	1	
R32	ERD25TJ334	330kΩ	±5%	1/4W	1	
R35,45,68, 83,84,86,96	ERO25TKG2001	2.0kΩ	±2%	1/4W	7	
R39	ERO25TKF7151	7.15kΩ	±1%	1/4W	1	
R41	ERO25TKG8203	820kΩ	±2%	1/4W	1	
R42,44,71, 74,75,87,88	ERO25TKG4700	470Ω	±2%	1/4W	7	
R46	ERO25TKG2201	2.2kΩ	±2%	1/4W	1	
R49,81	ERD25TJ332	3.3kΩ	±5%	1/4W	2	
R55	ERD25TJ220	22Ω	±5%	1/4W	1	
R56	ERO25TKF2001	2.0kΩ	±1%	1/4W	1	
R57	ERO25TKG1502	15kΩ	±2%	1/4W	1	
R60	ERO25TKG1503	150kΩ	±2%	1/4W	1	
R61	ERO25TKG3601	3.6kΩ	±2%	1/4W	1	
R62,63	ERO25TKG1003	100kΩ	±2%	1/4W	2	
R64	ERO25TKG8201	8.2kΩ	±2%	1/4W	1	
R66	ERO25TKG1501	1.5kΩ	±2%	1/4W	1	
R69	ERO25TKG1202	12kΩ	±2%	1/4W	1	
R80	ERF5AK1R2	1.2Ω	±10%	5W	1	
R93,94	ERD25TJ331	330Ω	±5%	1/4W	2	
R95	ERD25TJ363	36kΩ	±5%	1/4W	1	For NE-9930A
	ERO25TKG5602	56kΩ	±2%	1/4W	1	For NE-9930P
R101	ERD25TJ511	510Ω	±5%	1/4W	1	
RM1	EXBP87104M	100kΩ×7	±20%	1/8W	1	
RM2	EXBP85104M	100kΩ×5	±20%	1/8W	1	
RM3	EXBP84223M	22kΩ×4	±20%	1/8W	1	
RM4	EXBP85223M	22kΩ×5	±20%	1/8W	1	
Z1	EXBLD6104G	100/200kΩ	±2%	1/5W	1	

NE-9930A, NE-9930P DIGITAL PROGRAMMER CIRCUIT



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